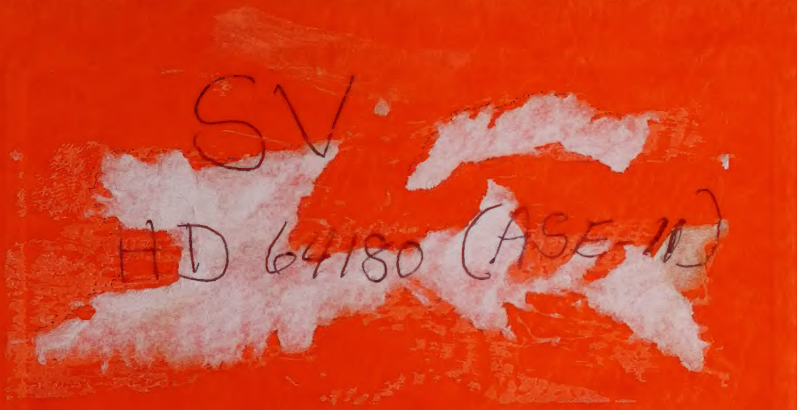
SV
HD 64180 (ASE II)

64180 ASE-II (HSP80ASE02H, HS180ABx02H)
Maintenance Manual

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1. APPLICATION

This manual applies to the maintenance of the H180ASE02H(abbriviated to the ASE hereafter). A maintenance group should be trained in maintenance according to this manual in the relevant department before guiding and providing maintenance.

2. CONFIGURATION AND ITS DESCRIPTION

This chapter describes the ASE hardware configuration and its description.

2.1 System Configuration

The ASE can be configured as a debug system explained below.

(a) Stand alone
Connecting the ASE with the console forms a debug system as follows.

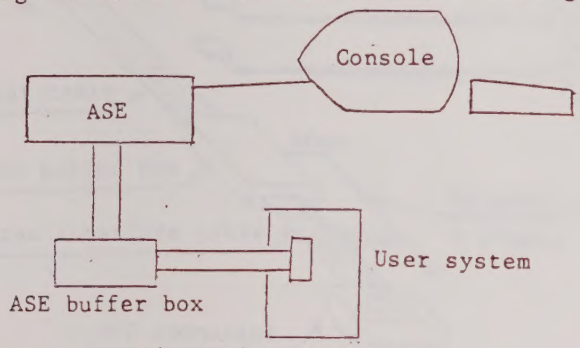

Fig. 2-1 Stand Alone

(b) Connecting with the H680SD200
Connecting the ASE with the H680SD200 (abbriviated to SD200 hereafter) forms a debug system as follows.

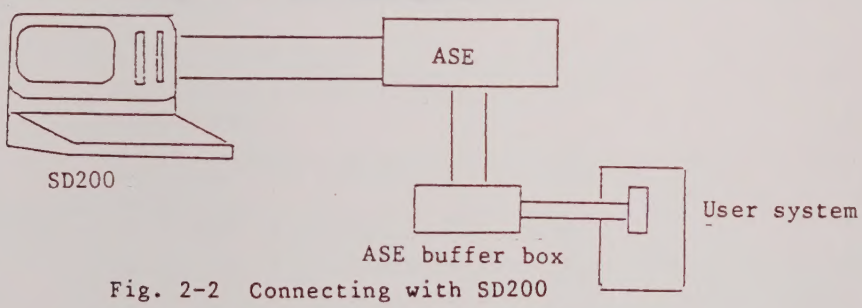

Fig. 2-2 Connecting with SD200

(c) Connecting with the general purpose host system
Connecting the ASE with the general purpose host system forms a debug system. In this case the interface to be connected should be RS-232C. And the ASE functions are limited to use. Fig. 2-3 shows the typical connection

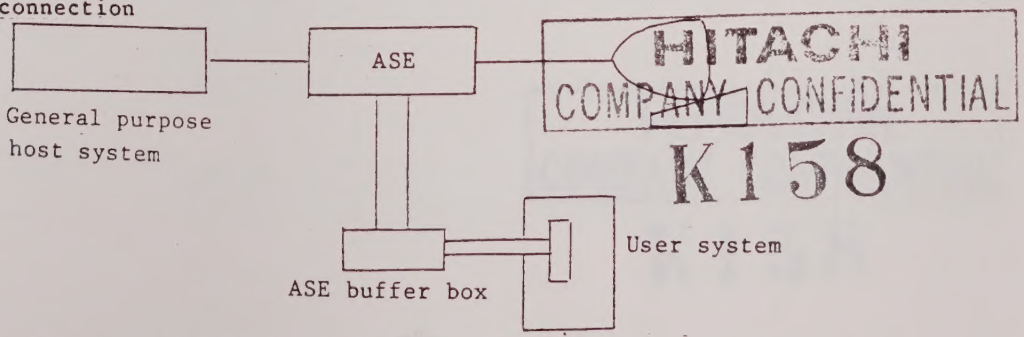

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Fig. 2-3 Connecting with General Purpose Host System

2.2 ASE Configuration

Fig. 2-4 shows the ASE configuration, Table 2-1 shows the specification of each part and table 2-2 shows the components list.

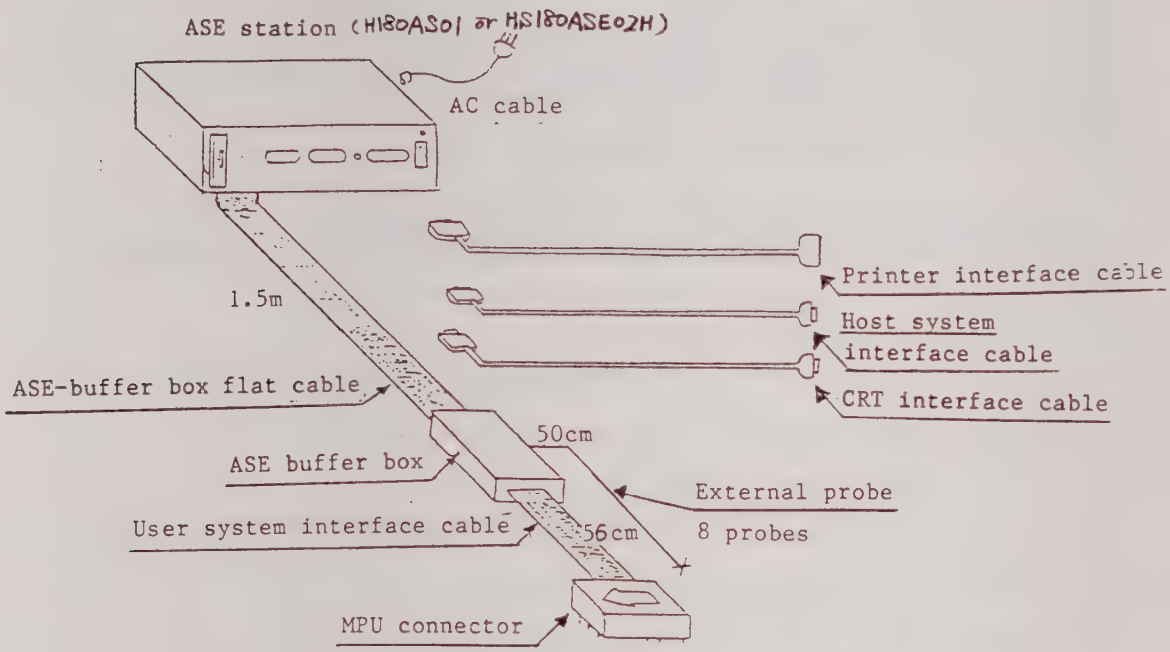

Fig. 2-4 ASE Configuration

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Table 2-1 Specification of Each Part

No.	Name	Item	Description
1	ASE station	Dimensions	483(W) x 153(H) x 423(D)
		Weight	15kg
		Installed boards	Standard : control board (1) trace board (1) Optional : emulation memory board (2)
		Power supply	Refer to "2.3.2.3 Power supply unit"
2	ASE buffer box	Dimensions	195(W) x 55(H) x 320(D)
		Weight	4kg (the ASE-buffer box flat cable and user system interface cable included)
		Installed boards	Buffer box board (3)
		Others	The ASE station supplies DC power.
3	MPU connector	Dimensions	35(W) x 20(H) x 87(D) (pins and screws not included)
		Others	Vcc pins on user system are connected only with the crystal oscillation circuit. (not with the ASE)
4	ASE-buffer box flat cable	Interface level	TTL level
		Length	1.5m (from ASE station outlet to buffer box inlet)
		Type	50-pin flat cable (3)
5	User system interface cable	Interface level	TTL level
		Length	56cm (from buffer box outlet to MPU connector inlet)
		Type	30-pin flat cable (2)
6	External probe	Interface level	TTL level
		Length	50cm
		Type	heatproof vinyl cord (0.5cm in diameter)(9)
7	Host system interface cable	Interface level	RS-232C
		Length	10 m
		ASE station side connector	D SUB 25-pin connector
		Host side connector	D SUB 25-pin connector
8	CRT interface connector	Interface level	RS-232C or TTL level (selected by the switch on control board)
		Length	10m
		ASE station side connector	D SUB 25-pin connector
		CRT side connector	D SUB 25-pin connector
9	Printer interface cable	Interface level	TTL level
		Length	3m
		Connectors	Station side : D SUB 37-pin connector Printer side : unphenol type 36-pin connector
10	AC cable	Length	2.5m
		Others	Double-pole grounded type

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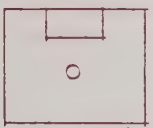
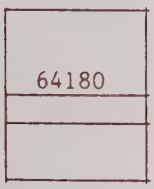
Table 2-2 Components List

No.	Article	Components	Qty	Contentss
1	ASE hardware	ASE station	1	2 boards installed
		ASE buffer box	1	• User system interface cable with MPU connector • ASE-buffer box flat cable • 3 boards
		RS-232C interface cable	2	• For host system interface (1) 10 m • For CRT interface (1)10 m
		AC cable	1	2.5m
		Printer interface cable	1	3m
		External probe	9	• For user signal input (8) • For GND (1) (50cm each)
		MPU connector	1	
		GND cable	2	
		Fuse	1	3A
		High-speed emulation memory board(H680SM01S)	———	2 boards can be installed
		Jacket	1	For preventing external noise of MPU connector
2	ASE software	 (3.5 inch)	1	(HS180ASE02H)
		(3.5 inch)	1	(S180TM02H)
3	64180ASE-II User's Manual		1	

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2.3 Detailed Configuration and Its Description

This section describes the detailed configuration of the ASE hardware.

2.3.1 Hardware logic

Fig. 2-5 shows the logical connection among the boards.

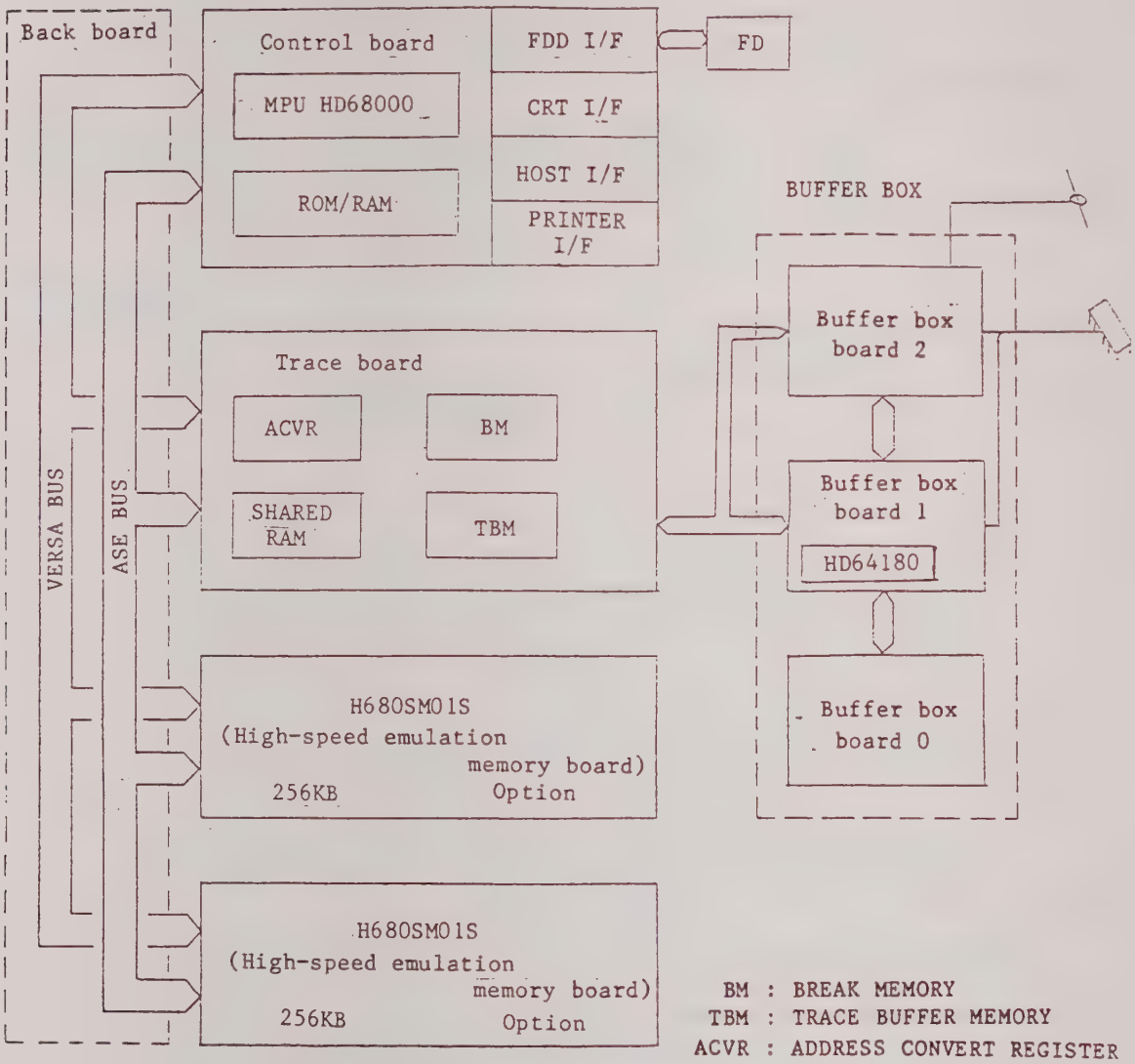

Fig. 2-5 The ASE Hardware Connection

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2.3.2 ASE station

This section provides the functions and description of the operating part of the ASE, lamps and each unit of the ASE. And also shows the way to disconnect the boards and cables.

2.3.2.1 Front panel

Fig. 2-6 shows the front panel. Table 2-3 shows the function of each part.

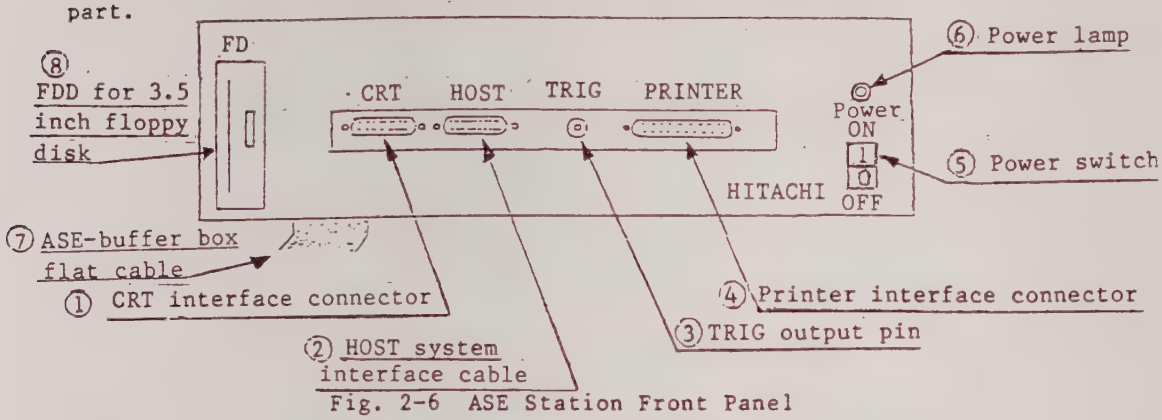

Fig. 2-6 ASE Station Front Panel

Table 2-3 Functions of Each Part (Front Panel)

No.	Name	Function
1	CRT connector	Connecting I/O cable for the CRT
2	Host system connector	Connecting I/O cable for the host system
3	TRIG output pin	Outputting pulse as trigger input waveform of the oscillator in trigger mode or cycle reset mode.
4	Printer connector	Connecting the cable for printer
5	Power switch	ON by pressing up OFF by pressing down Deciding the ASE power supply
6	Power lamp	Turning the power on lights the lamp. Turning the power off puts out the lamp.
7	ASE-buffer box flat cable	The cable for the buffer box, pulled out from the left below of the ASE station. Cramped in the chassis of the ASE station.
8	FDD for 3.5 inch floppy disk	This is used to load the ASE system software, and to load, save or verify the user program.

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2.3.2.2 Rear panel

Fig. 2-7 shows the rear panel. Table 2-4 shows the function of each part.

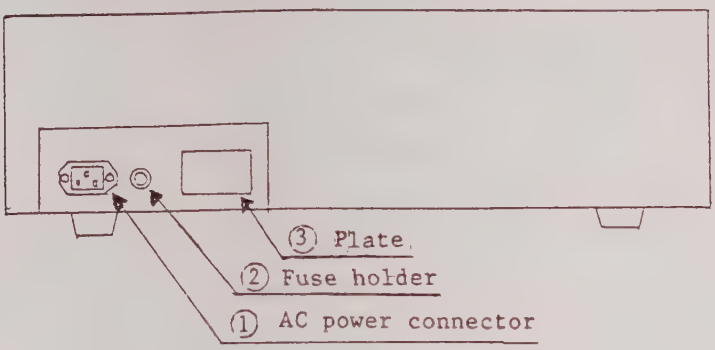

Fig. 2-7 The ASE Station Rear Panel

Table 2-4 Function of Each Part (Rear Panel)

No.	Item	Description
1	AC power connector	Connector for AC100/200V
2	Fuse holder	3A fuse installed
3	Plate	Indicates type name, serial number and production date

2.3.2.3 Power supply unit

The following shows the power supply specification. The power is also supplied to the buffer box through the cables.

(1) AC power input specification

Table 2-5 AC Power Input Specification

Item No.	Voltage	Phase	Frequency	Remarks
1	87 to 133V	single	50/60 ± 10%	Selected by jumper
2	174 to 266V			

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(2) DC power output specification

Table 2-6 DC Power Output Specification

Rated voltage (V)	Tolerance by input (%)	Tolerance for output (%)	Output power supply (A)		Overvoltage protection	Overcurrent protection	Ripple (below mVpp)	Ripple noise (below mVpp)
			Max.	Min.				
+5	±5	±10	17.5	2.0	5.8 to 7.0	short··· over 120%	50	100
+12	±10	——	0.3	—		short··· over 120%	100	200

(3) Replacing power supply unit

① Disconnect HOST, CRT, printer interface cables and AC power supply cables from the ASE station.

② Draw the front panel toward you.

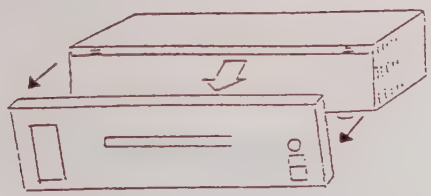
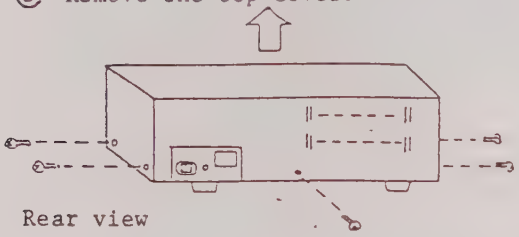


Fig. 2-8 Front Panel Removal

③ Remove the top cover.



Rear view

Remove 5 screws to pull up the top cover.

Fig. 2-9 Top Cover Removal

Screws : M4 x 8 (5)
Tool : Phillips screwdriver, large

④ Disconnect AC power input cable(J1PS connector) and +5V output cable (J2PS connector) and FDD power supply cable(J3PS connector) from power supply.

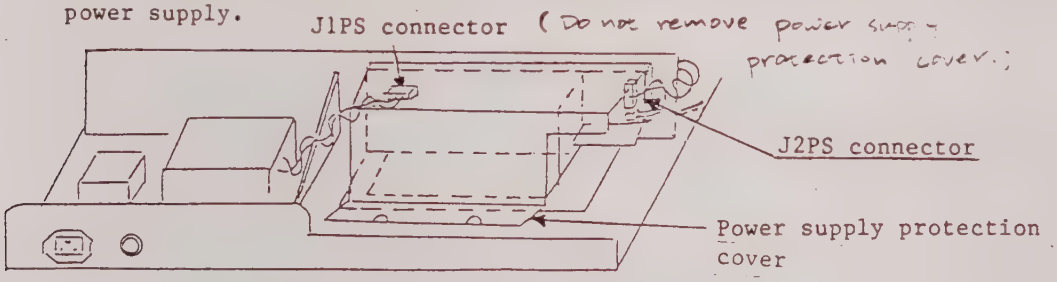
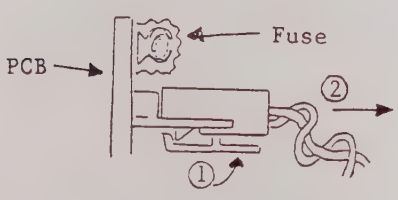


Fig. 2-10 Connectors Removal

<Removing the connectors (J1PS connector and J2PS connector)>



(Note) When connecting the connectors, make sure that the cramp beneath the receptacle catches pawl beneath the plug with clink.

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Fig. 2-11 Connectors Removal

⑤ Remove four screws and the power supply protection cover.

Screws : M4 x 10 (4)
M3 x 20 Pan head screw (1)
Tools : Phillips screwdriver, large
Box wrench (M3)

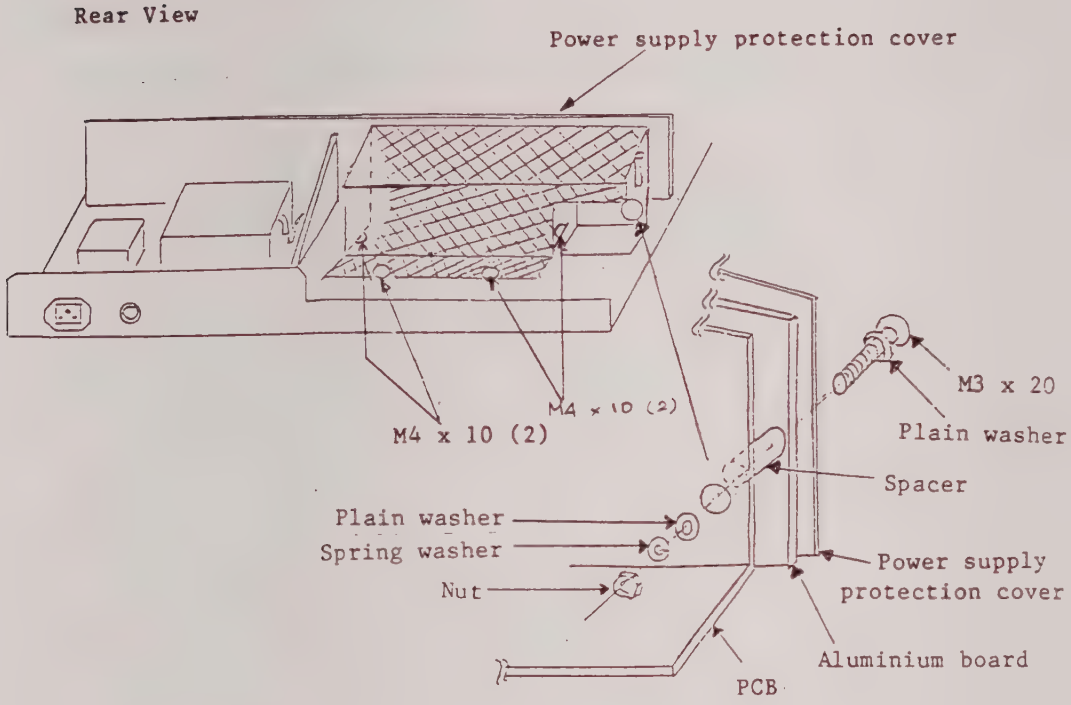

Fig. 2-12 Power Supply Protection Cover Removal

(Note) Be careful not to damage the adjacent parts when removing the pan head screws. And take care not to lose washers.

⑥ Remove two screws and the power supply.

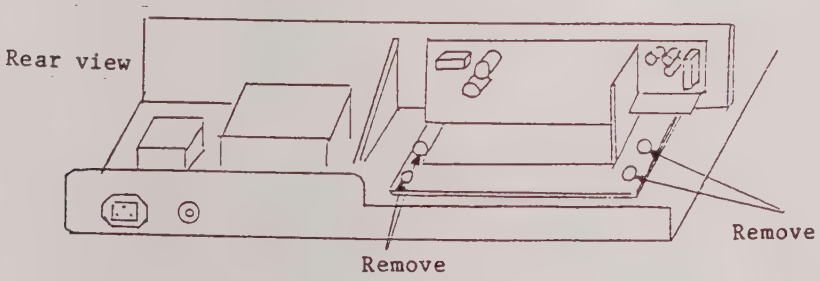

Fig. 2-13 Power Supply Removal

Screws : M4 x 12 (4)
Tool : Phillips screwdriver, large

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⑦ Install the power supply taking steps ⑥, ⑤, ④, ③, ②, ① in that order.
When connecting J1PS connector and J2PS connector, make sure to secure the connector clamps.

2.3.2.4 Fan unit

(1) Below are described the fan unit specification.

Table 2-7 Fan Unit Specification

Voltage	Frequency	* Power supply
100V to 120V	50/60Hz	100V to 120V
200V to 240V		200V to 240V

* Power supply (100V to 120V or 200V to 240V) is set with a fuse (0.5A) at shipment.

(2) Replacing the fan unit

① Disconnect AC plug from AC receptacle.

② Remove the front panel.

③ Remove the top cover.

④ Disconnect the fan cable.

⑤ Remove three screws and the fan.

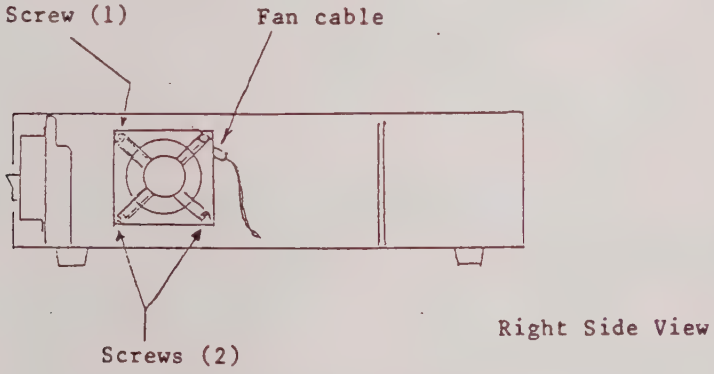

Fig. 2-14 Fan Unit

Screws : M3 x 34 (3)
Tool : Phillips screwdriver, large

⑥ Install the fan taking steps ④, ③, ②, ① in that order.

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2.3.2.5 AC power fuse

(1) Replacing the fuse on the hot-line side
Replace the fuse on the hot-line side in the back of the ASE station.

① Disconnect AC plug from AC receptacle.

② Replace the fuse in the fuse holder on the rear panel.

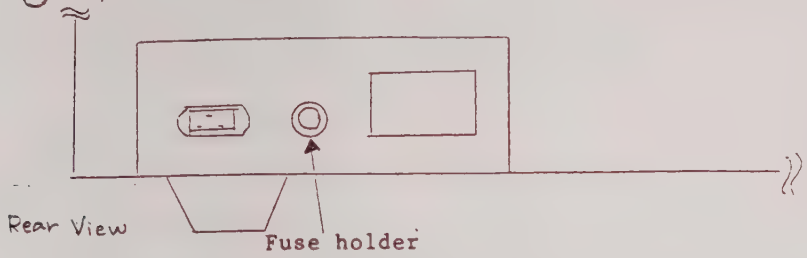

Fig. 2-15 Fuse Holder on the Rear Panel

③ Replacement fuse : 3A
Check the new fuse for conductivity before replacement.

④ Check the new fuse for conductivity after replacement as follows.

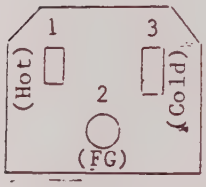

Fig. 2-16 Front View of AC Plug

a. With the power switch ON.
1--2 : Not conducted
1--3 : Conducted

b. With the power switch OFF.
1--2 : Not conducted
1--3 : Not conducted

(2) Replacing the fuse on the cold-line side
The fuse on the cold-line side is in the DC power supply.

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① Remove the top cover.
Refer to Fig. 2-9.

Screws : M4 x 8 (5)
Tool : Phillips screwdriver, large

② Replace fuse taking steps ④, ⑤ in that order in the section "2.3.2.2 (3) Replacing the power supply".
Remove the vinyl cover, then replace fuse.

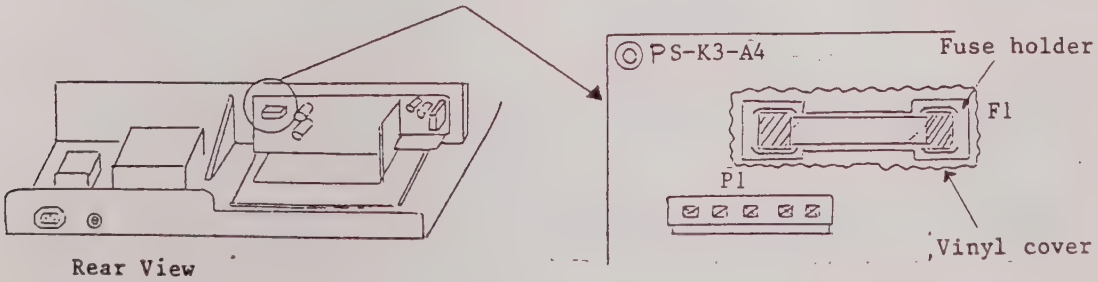

Fig. 2-17 Fuse on the Cold-Line Side

③ Replacement fuse : 5A
Check the new fuse for conductivity before replacement.

④ Check the new fuse for conductivity after replacement.

⑤ Put the vinyl cover.

⑥ Put the power supply protection cover.
Refer to Fig. 2-12.

⑦ Connect J1PS connector and J2PS connector.
Refer to Fig. 2-10.

⑧ Put the top cover.
Refer to Fig. 2-9.

(3) Replacing fan unit fuse

① Replace the fuse on AC line to the fan unit.
This fuse is on 100V AC line or 200V AC line depending on the supply voltage used. According to the destination the fuse is on either line at shipment.

② Disconnect AC plug from AC receptacle.

③ Remove the top cover.
Refer to Fig. 2-9.

④ Check the new fuse for conductivity before replacement.

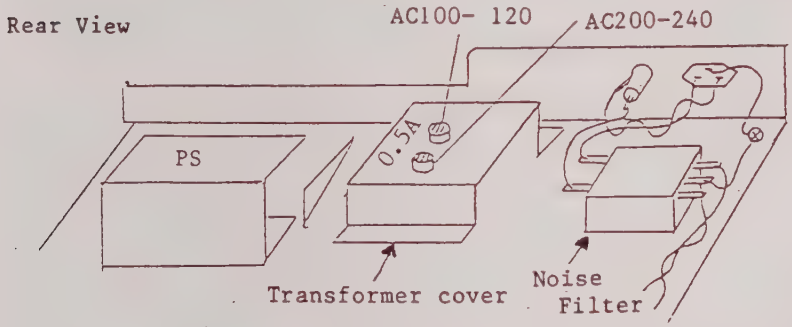

Fig. 2-18 Fan Unit Fuse Replacement

Replacement fuse : 0.5A

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⑤ When inserting a new fuse, make sure that the label (AC100-120, AC200-240) agrees with specification on the plate on the rear panel. Then put the fuse as shown in Fig. 2-18.

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Hz 50/60 V 100-120 A 2	Hz 50/60 V 200-240 A 1

⑥ Insert AC plug to the receptacle without the top cover. But make sure that there is nothing conductive around AC line before turning the power switch ON.

⑦ Make sure of the fan working normally. Disconnect AC plug and install the top cover with the power switch OFF.

2.3.2.6 Installed boards

This section describes the boards installed in the ASE station. Fig. 2-19 shows the installing procedure.

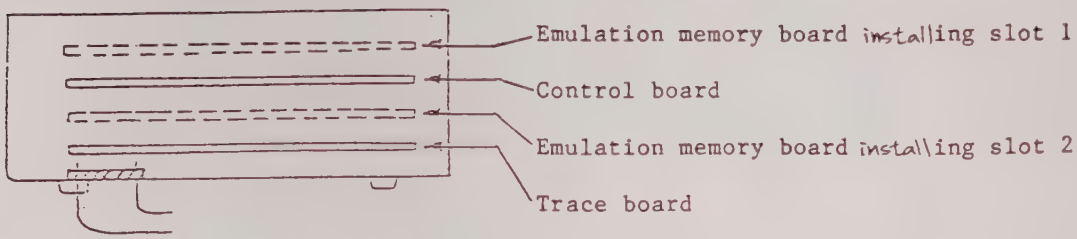

Fig. 2-19 Installed Boards

(1) Control board (H180CONT02)
This board consists of MPU68000, ROM, RAM, timer, Monitor Register and the interface circuits among 3.5 inch FD, HOST, CRT and PRINTER. This is the main board of the ASE, therefore, it prepares for the emulation, monitors, and analyzes the emulation. And it controls CRT, HOST and PRINTER interface.

(2) Trace board (H680AS02T)
This board consists of Trace Buffer Memory (TBM), Break Memory (BM), Address Convert Register (ACVR), SHARED RAM and buffer box interface. The user writes data for executing the emulation in the TBM and the TBM offers the data for analysis. The BM compares TRACE-BREAK-CONDITION with current bus, and if they agree with each other, halts the emulation.
The board is connected with buffer box through interface cable. The commands used for emulation is sent to the buffer box through the SHARED RAM. The ACVR controls the emulation memory.

(3) High-speed emulation memory board (H680SM01S)
This is 256KB static memory board. The ASE station has 2 boards. This board works as memory at emulation. The user can set any address by 4KB unit.
This board enables real-time emulation by 6.144 MHz clock.

The procedure of removing the installed boards is as follows.

① With the power OFF, disconnect AC cable from the receptacle.

② Disconnect HOST, PRINTER and CRT interface cables from the ASE station.

③ Remove the front panel.

④ Remove each board.

(1) Control board
Remove two screws, pull out the board by half and remove the FD connector, then draw out the board completely.

(2) Trace board
Disconnect the ASE-buffer box flat cable from connectors P5, P4 and P3 on the trace board. Then remove the power lamp cable and draw the board out. Take care not to damage flat cables P3, P4 and P5 by the parts mounted on the board.

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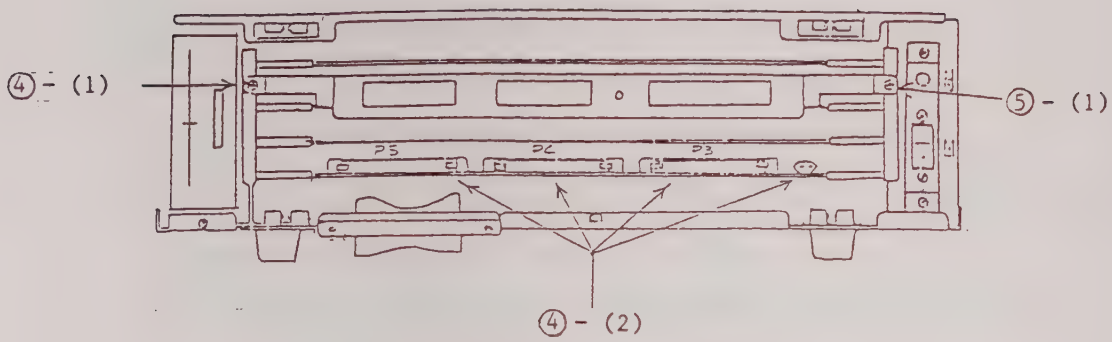
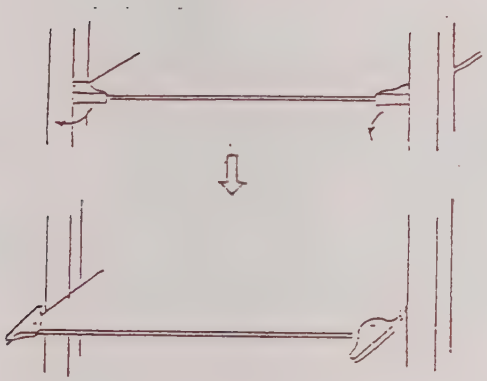


Fig. 2-20 Boards Installation



When pulling out the board, pull out two card-pullers along the guide by both hands.

Fig. 2-21 Pulling the Board Out

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2.3.2.7 Floppy Disk Drive (FDD) for 3.5 inch floppy disk

FDD for 3.5 inch floppy disk is used to load firmware and to load, save and verify user program.

FDD for 3.5 inch floppy disk is removed as follows.

① With the power OFF, disconnect AC cable from receptacle.

② Disconnect HOST, PRINTER and CRT interface cables from the ASE station.

③ Remove the front panel, then the top cover.

④ Disconnect FDD power supply cable and FDD cable from the FDD.

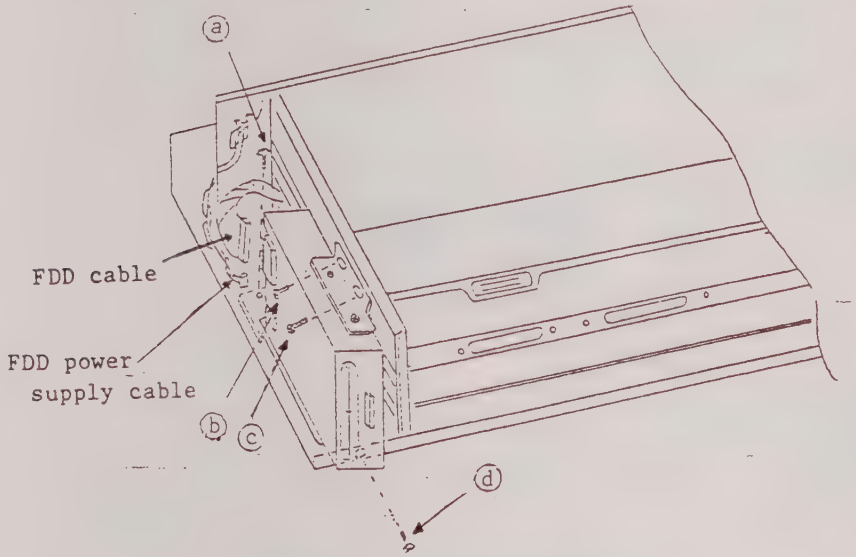

Fig. 2-22 FDD Cable and FDD Power Supply Cable Removal

⑤ Remove the screws (ⓐ to ⓓ above) and then the FDD from the ASE station.

⑥ Remove 4 screws and metal fittings from the FDD.

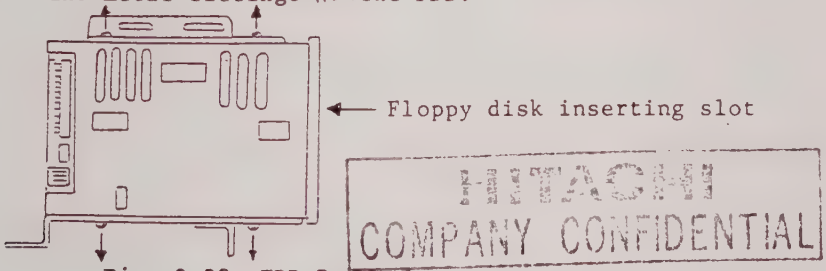

Fig. 2-23 FDD Removal

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FDD for 3.5 inch floppy disk is installed as follows.

① Install FDD for 3.5 inch floppy disk according to the reverse procedure of removing the FDD. (⑥ ⑤ ④ ③)

② In step ⑤ , fix the FDD to the center of the screw, or the FDD is pulled out too much over the front panel for the panel to be closed firmly.

③ In step ④ , do not mix up the direction of FDD cable.

2.3.2.8 Replacing other maintenance parts

(1) Replacing the back board

① Disconnect AC plug of the ASE from AC receptacle.

② Remove the front panel, then the top cover.
Refer to Fig. 2-8 and Fig. 2-9.

③ Remove the power supply according to the section "2.3.2.3 (3) Replacing power supply".

④ Remove the back board, the screws and card cages according to Fig. 2-24.

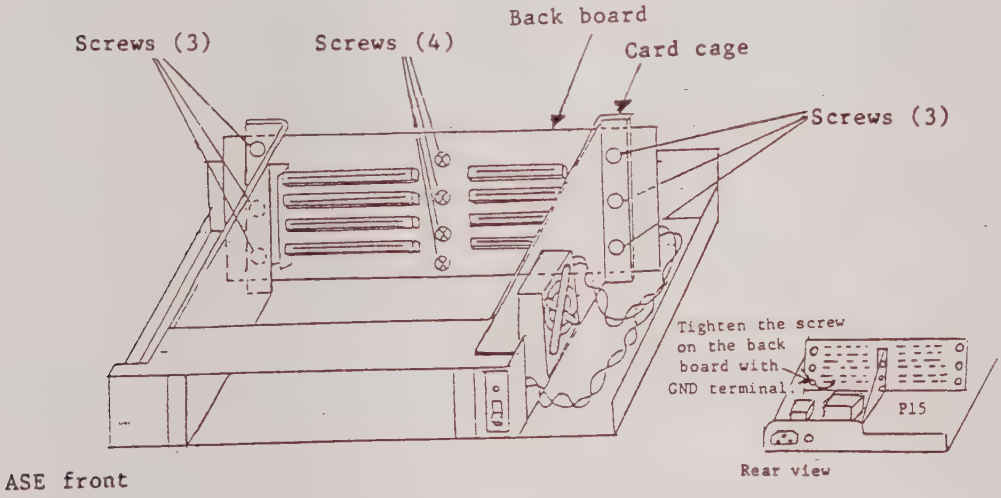

Fig. 2-24 Replacing Back Board

Screws : M3 x 8 (10)
Tool : Phillips screwdriver, large

⑤ When installing a new back board on the card cage with screws, take care not to bend the leads of 140-pin connector P1 and 120-pin connector P2 to short circuit.
Fix the GND terminal and the back board to the card cage by tightening screws. The GND terminal is connected to the soldered surface of the back board.

⑥ Install the power supply. Refer to the section "2.3.2.3 (3) Replacing power supply".

⑦ Install the top cover, then the front panel.
Refer to Fig. 2-8 and Fig. 2-9.

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(2) Replacing LED for the power lamp

① Remove the front panel.
Refer to Fig. 2-8.

② Remove the top cover.
Refer to Fig. 2-9.

③ Remove the screws of LED and power switch mounted panel.

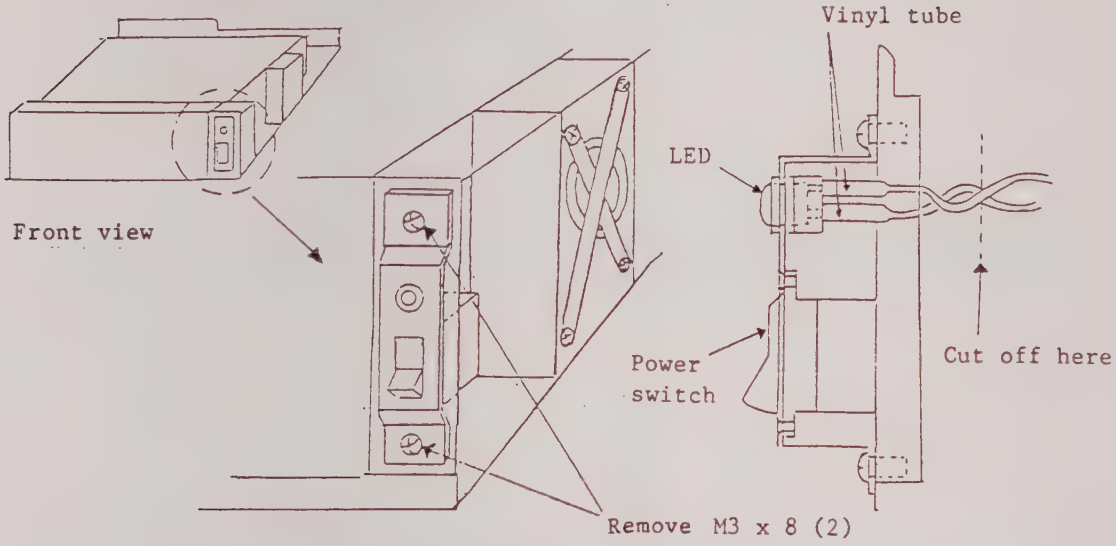
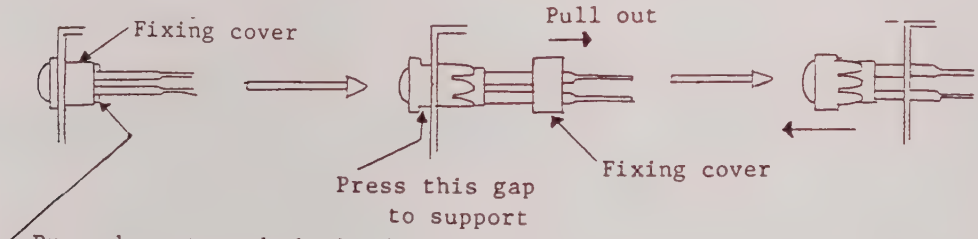


Fig. 2-25 Replacing LED for the Power Lamp

④ Cut off the two LED leads.

⑤ Pull out the LED and power switch mounted panel a little, then remove the LED fixing cover on the back of the panel.



Press here toward the head of LED, and as holding the LED cover, pull out the fixing cover with pliers (with slim joint).
Make sure to use the pliers with proper holding (lightly).

Fig. 2-26 LED

⑥ Disconnect LED 5V connector on the trace board. Cut off a cables-tying line with nipper.

⑦ Replace a new LED to the fixing panel according to the reverse procedure of ⑤.

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⑧ Solder two leads to LED terminal. Do not mix up the combination of lead and wire. Always use vinyl tubes.

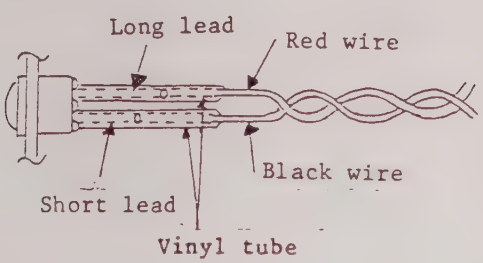

Fig. 2-17 Combination of Lead and Wire

⑨ Bundle the two wires and fix them to the chassis. Find the good fixing position so as not to damage the wires by the chassis when installing the front panel.

⑩ Install the top cover.

⑪ Install the front panel.

2.3.3 Buffer box and user system interface cable

This section describes the outline and removal procedure of the buffer box and the user system interface cable.

2.3.3.1 Functional outline

Fig. 2-28 shows the configuration.

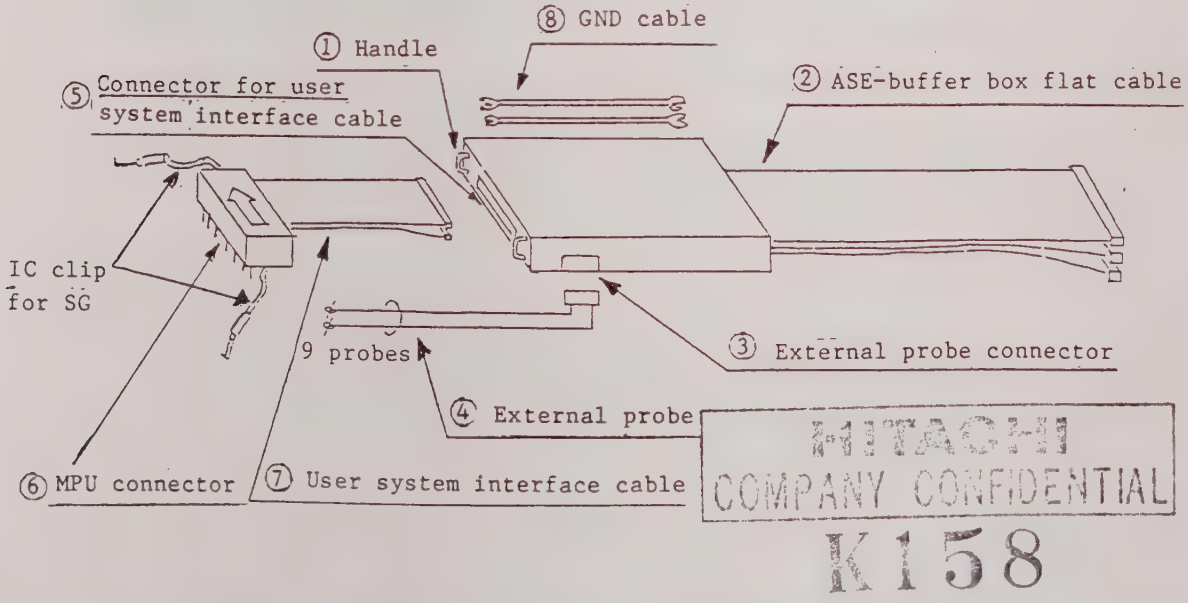

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Fig. 2-28 Buffer Box and MPU Connector Configuration

2.3.3.2 Installed boards

This section describes installing the boards in the buffer box. Fig. 2-29 shows the installation place.

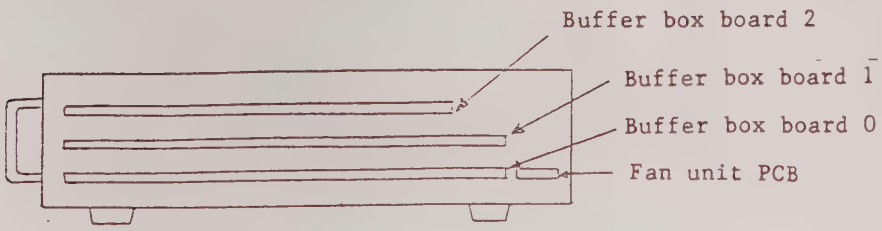


Fig. 2-29 Installed Boards in Buffer Box

(1) Buffer box board 0
This board consists of Memory Management Unit (MMU), Map Control Register (MCR), and EMulator Control Register (EMCR). The MMU outputs the address bus of HD64180 to the user system. The MCR controls memory. The EMCR controls the space during emulation.

(2) Buffer box board 1
This board consists of HD64180 for emulation, ROM and the ASE station interface. The HD64180 receives a command from the ASE station through SHARED RAM on the trace board, then executes emulation.

(3) Buffer box board 2
This board consists of Software Coverage Register (SCR), I/O map decoder and emulation memory. This board informs the ASE station of the external signal.

(4) Fan unit board
This board supplies the power to the fan unit in the buffer box. Buffer box board 0 supplies this board +5V.

Remove the boards as follows.

① With the power OFF, disconnect AC cable from the receptacle.

② Disconnect the external probe from the buffer box.

③ Disconnect the user system interface cable from the buffer box. Fig. 2-30 shows disconnecting. Open the clamp of connector for the socket adapter toward either side and pull out them. Disconnect two connectors.

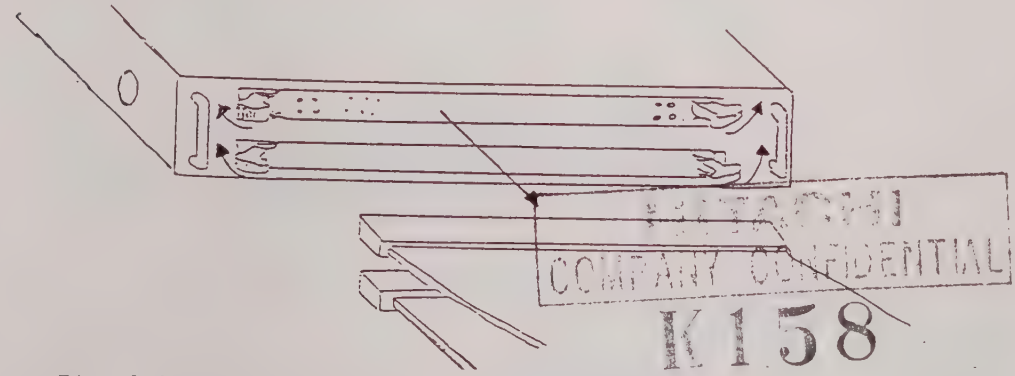


Fig. 2-30 Disconnecting User System Interface Cable

④ Remove the top cover.

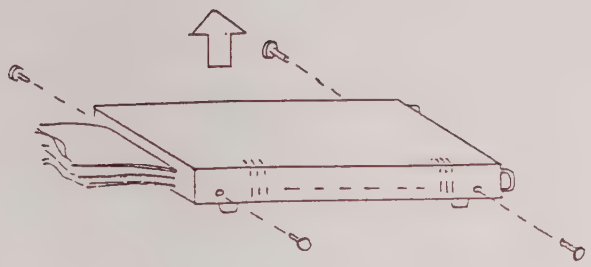
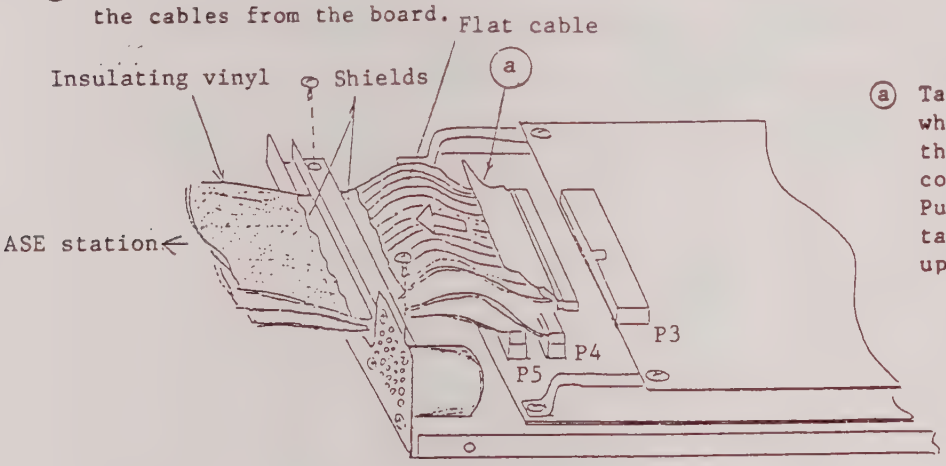


Fig. 2-31 Top Cover Removal

⑤ Remove two screws and the clasps of ASE-buffer box flat cables and disconnect the cables from the board.



ⓐ Take this part when pulling out the cable from the connector.
Pull P3 horizontally, P4 and P5 upwards.

Fig. 2-32 Cable Removal

⑥ After removing P6, P7 and P8, remove screws fixing each board and pull out the buffer box board 1, 2.

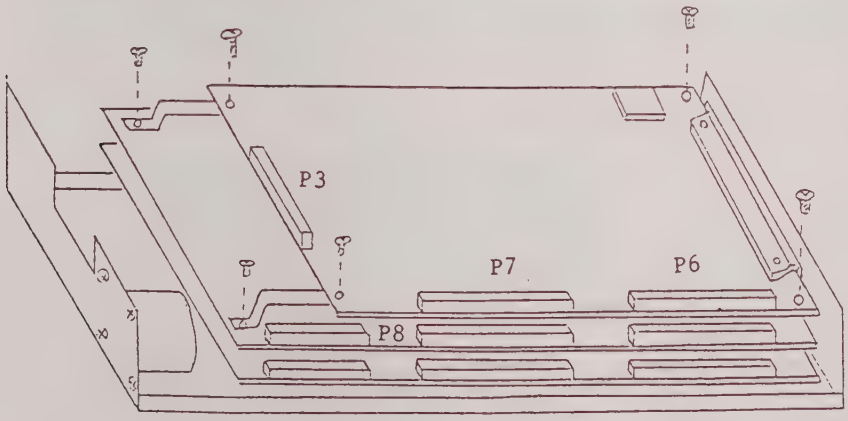


Fig. 2-33 Board Removal

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⑦ After removing P9, take off the buffer box 0 by the same procedure as ⑥.

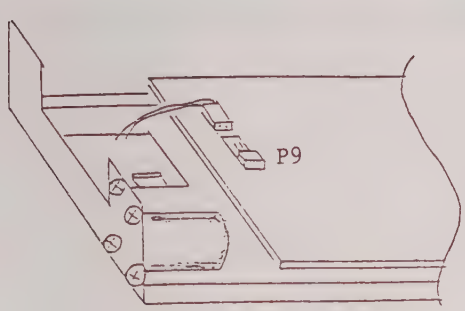

Fig. 2-34 Board Removal

The procedure of installing the boards is as follows.

a Install the boards according to the reverse procedure of removing the boards.
b In the step ⑤, be sure of the upper and lower sides of three cable shields in contact with each clasps.

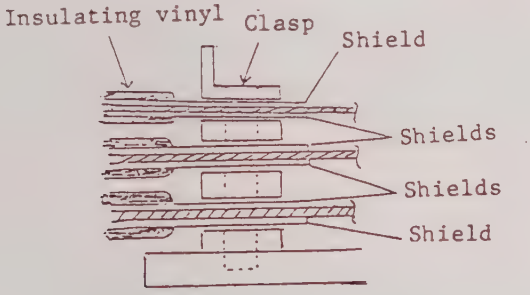

Fig. 2-35 Shields of ASE-Buffer Box Cables

c In the step ③, connect J1 cable to the buffer box board 2, J2 cable to the buffer box board 1.

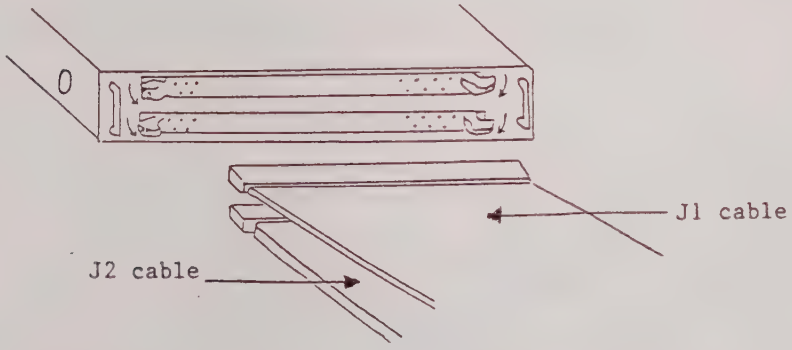

Fig. 2-36 Connecting User System Interface Cable to Buffer Box

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The procedure of removing the fan unit and the fan unit board is as follows.

a Remove the boards according to the procedure ① to ⑦ .

b Remove the connector between the fan unit board and the fan unit, then remove the screws and the board.

c Remove the screws fixing the fan unit with 6 mm wrench and Phillips screwdriver, then remove the fan unit.

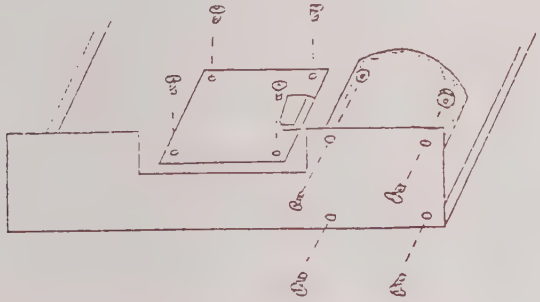

Fig. 2-37 Fan Unit Removal

The procedure of mounting the fan unit and the fan unit board is as follows.

Take the reverse procedure of removing the fan unit and the fan unit board. Take enough care not to damage the fan unit by a wrench.

2.3.3.3 MPU connector

Connecting MPU connector on the user system with 64-pin MPU IC socket of the user system enables HD64180 resided in the buffer box to operate instead of the MPU. Protection socket is applied to the MPU connector for protecting the pins. The procedure of removing MPU connector is as follows.

① Remove two screws and remove the cover ⓐ and ⓑ in that order.

② Disconnect the flat cable P12 and P11 in that order. Raise the connector little by little for both sides with a screwdriver.

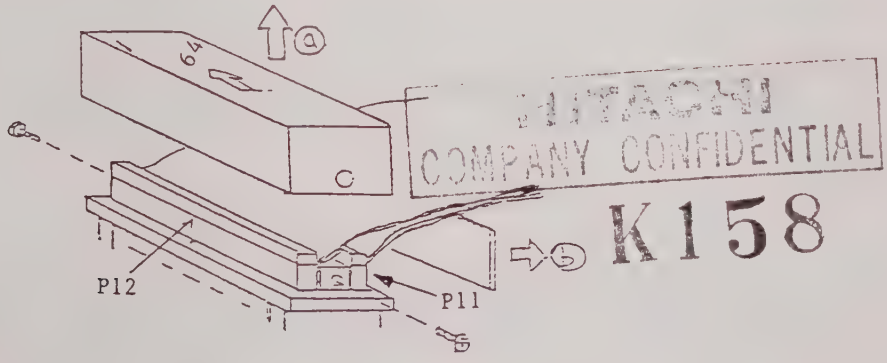

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Fig. 2-38 MPU Connector Removal

3. SYSTEM CONNECTION AND EXPANSION

This chapter describes the procedures of connecting the system and installing emulation memory borads.

3.1 Outline

The ASE has various system configuration as shown in the section "2.1 System Configuration".

(1) Stand alone (connecting only with a console)

(2) Connecting with SD200

(3) Connecting with general purpose host system

Connecting the ASE to any host system other than SD200 requires the user to apply proper interface specification. Also, it is possible to connect to a printer. However, connecting to the printer not recommended by Hitachi also requires the user to apply proper interface specification. And the ASE has two high-speed emulation memory boards to be installed. (256KB)

3.2 Connecting Power Supply Cable

The user should prepare AC receptacle (double-pole grounded type). Use the attached AC cable for connecting to the connector on the ASE station rear panel.

3.3 Connecting Signal Cables

3.3.1 Connecting with console

Serial interface is used for input/output operations between the ASE and the console. As shown in Fig. 2-9, there is the CRT connector on the ASE station front panel. This connector enables both RS-232C and TTL level connection. As for the pin assignment of the CRT connector, the interface selecting switch (RS-232C or TTL) and the baud rate setting switch, refer to the section "4.2 Connecting with Console" in "64180 ASE-II User's Manual".

3.3.2 Connecting with host system

Serial interface is used for input/output operations between the ASE and the host system. As shown in Fig. 2-9, there is the host system connector on the ASE station front panel. The interface is RS-232C level.

As for the pin assignment of the host system connector, refer to the section "4.3 Connecting with General Purpose Host System" in "64180 ASE-II User's Manual".

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3.3.3 Connecting with printer

The ASE is connected with the printer through centronics interface specification. As shown in Fig. 2-9, there is the printer connector on the ASE station front panel. Connect the ASE with the printer by this connector. The printer is to be prepared by the user.

As for the pin assignment of the printer connector and that on the printer, the recommended printer and the timing chart of the printer support software, refer to the section "4.4 Connecting with Printer" in "64180 ASE-II User's Manual".

3.3.4 Connecting with SD200

When connecting with the SD200, you do not have to think about CRT and HOST interface specifications. The connecting procedure is as follows.

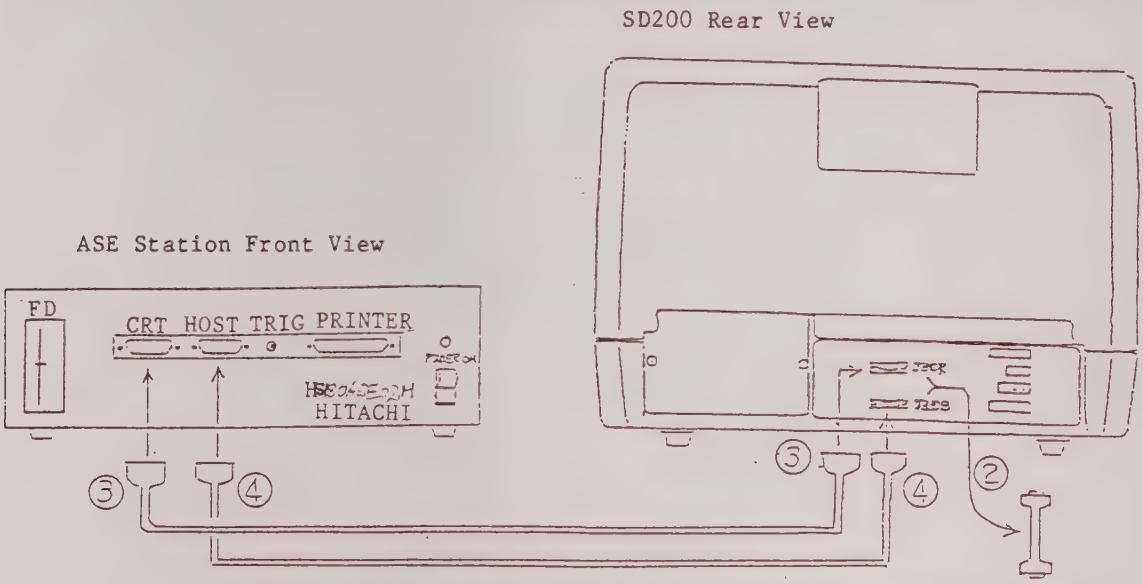

Fig. 3-1 Connecting with SD200

① With the ASE power and SD200 power OFF, disconnect the AC cable from the receptacle.

② Disconnect the cable between J3CR and J3DB on the back of the SD200 by removing 4 screws.

③ Connect CRT connector on the ASE station front panel with J3CR connector on the back of the SD200 by one of the two attached cables, and screw up the connectors.

④ Connect HOST connector on the ASE station front panel with J3DB connector on the back of the SD200 by the other cable, and screw them up.

3.3.5 Connecting with ASE buffer box

As shown in Fig. 2-6, the ASE buffer box is connected with the ASE by the ASE-buffer box flat cable. Below is described the connecting procedure.

① With the power OFF, disconnect the AC cable from the AC receptacle.

② Disconnect HOST, CRT and printer interface cables and the AC cable from the ASE station.

③ Draw the ASE station front panel toward you.

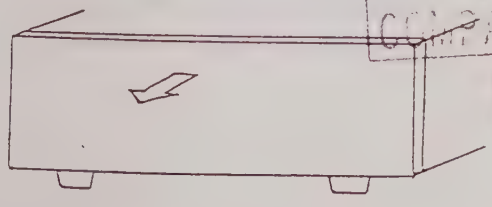

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Fig. 3-2 Front Panel Removal

④ Insert the folded cable on the ASE station side to the case at the bottom of the ASE station. Ensure that the cable end is under the trace board connector.

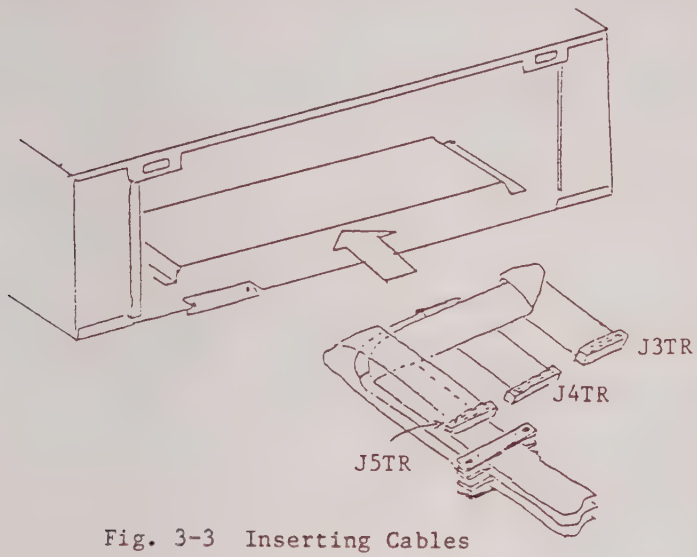

Fig. 3-3 Inserting Cables

⑤ Mount the cable clamp at the bottom left in the front of the ASE station.

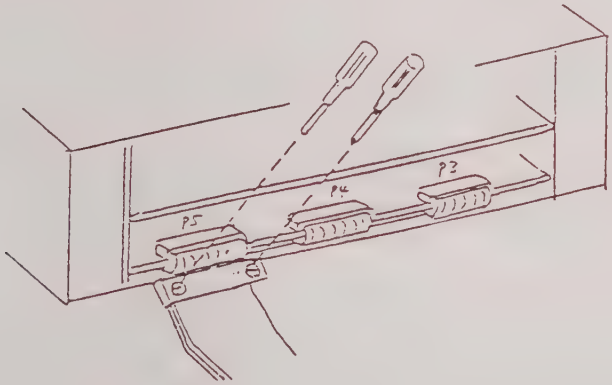

Fig. 3-4 Mounting Cable Clamp

⑥ Connect cables J3TR, J4TR and J5TR respectively to connectors P3, P4 and P5 on the trace board.

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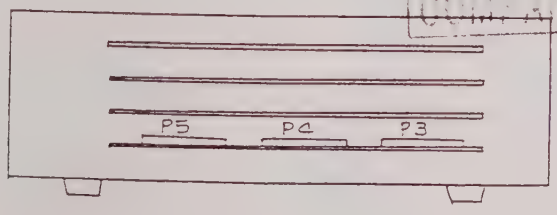

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Fig. 3-5 Position of Connectors

⑦ Make sure again of the connection between each connector and cable.

⑧ Install the front panel.

3.3.6 Connecting user system interface cable

This section describes the procedure of connecting and disconnecting of the user system interface cable to and from the ASE station and the user system.

Fig. 3-6 shows the procedure of connecting the user system interface cable.

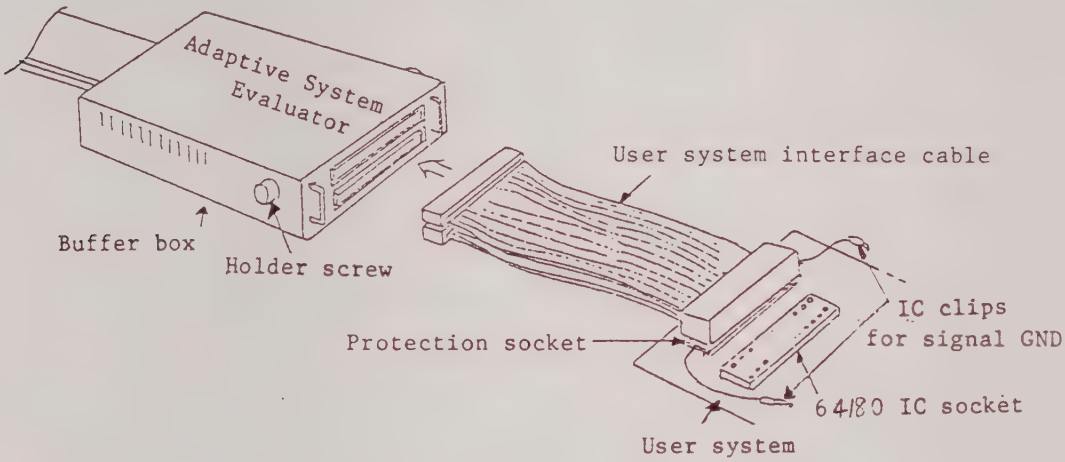

Fig. 3-6 Connecting User system interface cable

When connecting to the user system, check the MPU connector and MPU IC socket pin. As MPU IC socket, use IC83-64075G64 (produced by Yamaichi Electric Mfg. Ltd.) or equivalent.

Connect two GND IC clips to the user system GND. They are for GND reinforcement. Therefore, if not connected to them, the ASE might operate wrong.

The attached GND cable is also for reinforcement of GND between the ASE buffer box and the user system. Connect the holder screw of the ASE buffer box to the user system frame GND by this cable.

When removing this cable, take the reverse procedure of connecting. But disconnect it from MPU IC socket by raising little by little by a screwdriver.

Attached is the jacket for preventing external noise such as static electricity. If external noise causes wrong operation, put the jacket on the user system interface cable. The GND terminals of the jacket is connected to the holder screw on the buffer box and the user system GND. (Refer to Fig. 3-7.)

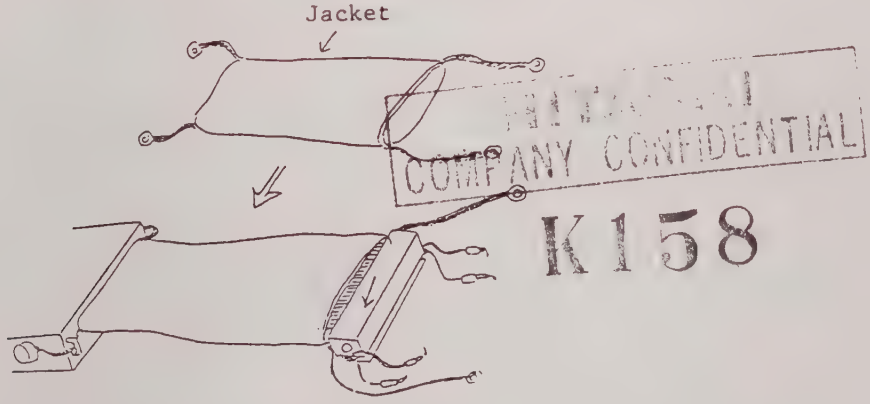

Fig. 3-7 Jacket Connection

3.4 Connecting System GND Line

Connect the system GND line as follows.

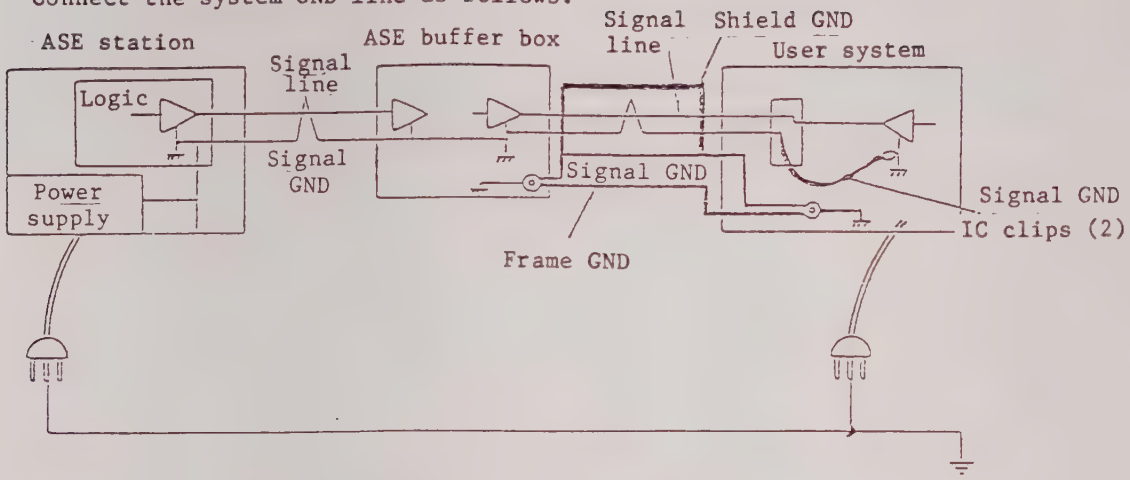

Fig. 3-8 System GND Line Connection

(Note 1) The signal GND and the frame GND are connected in the ASE station.

(Note 2) The signal GND in the buffer box is connected to the signal GND in the user system through the user system interface cable. The GND is reinforced by the GND IC clips of MPU connector.

(Note 3) In the user system, connect to not both the signal GND and the frame GND, but only the frame GND. When it is difficult to separate the frame GND from the signal GND, remove the same GND as frame GND of the 100V power supply.

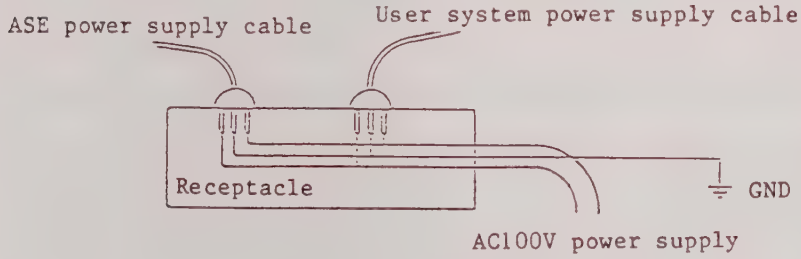

Fig. 3-9 Frame GND Connection

Connect the most suitable system GND and make the effect of noise and GND loop least. Connect the holder screw of the buffer box to the user system frame GND by the attached GND cable. Two GND IC clips from the MPU connector. Connect them to the IC GND around the MPU. They reinforce the GND between MPU and the user system.
Putting the attached jacket on the MPU connector causes the shield GND between the buffer box and the user system.(as shown in Fig. 3-8) This is for preventing external noise or radio wave trouble. As for the connecting procedure, refer to "3.2 Connecting MPU Connector".

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3.5 Emulation Memory Boards Installation

The ASE can have up to two high-speed emulation memory boards (H680SM01S) at user's option.
The memory board has the address setting switch. Set it as shown in Fig. 3-10. The first board address setting differs from the second board address setting. The address of the board has no relation to the address used as the user system memory. The "unused" switch in the figure may be set to either side.

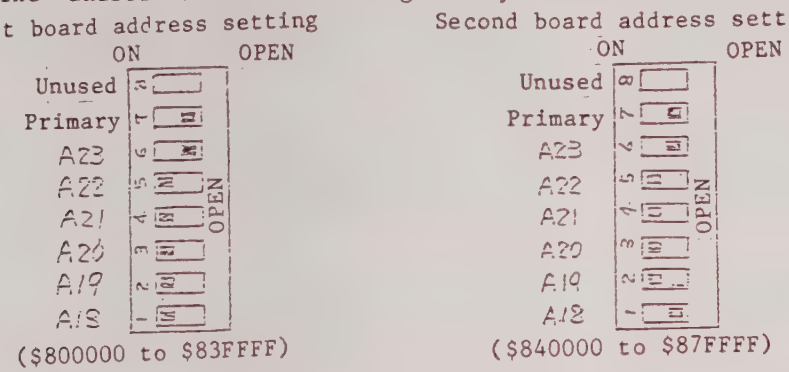

Fig. 3-10 High-Speed Emulation Memory Address Setting

The following shows the installing procedure of the emulation board.

① Make sure that the ASE power is OFF. Turn the host system, the console and the printer OFF.

② Disconnect the ASE station power cable from the power supply receptacle.

③ Disconnect the host system, the console and the printer interface cables from the ASE station.

④ Remove the front panel.

⑤ Check the address setting switch of the emulation memory board.

⑥ Insert the board in the first or third slot along the housing guides with the parts-mounted side up. Then set the card pullers with a memory board inside two supports, and force the board securely as holding card pullers by both hands. (Refer to Fig. 3-11.)

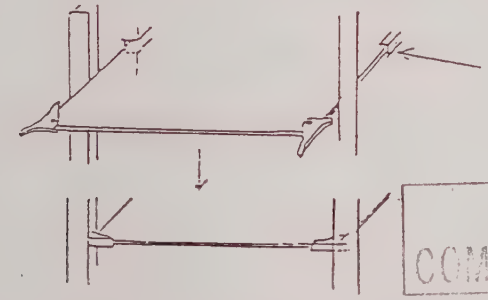

Fig. 3-11 Inserting Board

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⑦ Install the front panel.

⑧ Connect the host system, the console and the printer interface cables.

4. OPERATING CONDITION

4.1 Power Supply Condition

See the following table on power supply condition.

Table 4-1 Power Supply Condition

No.	Item	Condition	Remarks
1	Input voltage	Single phase AC100V to 120V ± 10% AC200V to 240V ± 10%	
2	Input frequency	49 to 61Hz	
3	GND		
4	Power consumption	0.3KVA	

4.2 AC Power Supply

The power supply is installed to the cabinet panel. As branch circuit switch, use no-fuse circuit breaker.

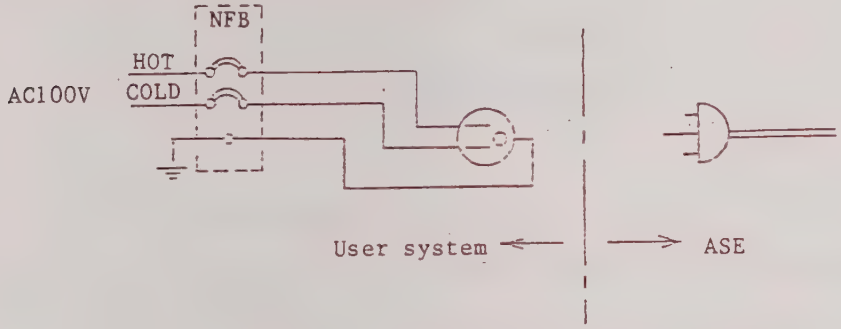

Fig. 4-1 Cabinet Panel Branch Circuit

As receptacle, use double-pole grounded type receptacle (125V, 15A) or equivalent.

4.3 Noise Prevention

The electric noise generated by the other apparatus may trouble the ASE, therefore, take care the following points

(a) Keep off other apparatus of generating electric noise.

(b) Do not connect other electric apparatus to the branch circuit of the ASE, or in the trouble of the other apparatus NFB operates and the ASE is in danger of down.

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4.4 Environmental Condition

Below are listed the environmental condition.

Table 4-2 Environmental Condition

No.	Item	Condition	Remarks
1	Temperature	Operating : 10 to 35°C Storage :-10 to 50°C	
2	Humidity	Operating : 35 to 80%RH (Without condensation) Storage : 35 to 80%RH (Without condensation)	
3	Vibration	Operating : Max. 0.25G Storage : Max. 0.5G During delivery : Max. 1.5G	
4	AC input	Voltage : AC100V to 120V ± 10% AC200V to 240V ± 10%	
	voltage	Frequency : 50/60Hz Power consumption : 200VA or less	
5	Ambient gas	No corrosive gas	

5. PRECAUTIONS AT MAINTENANCE

At maintenance, notice the following points to prevent the second trouble caused by wrong handling.

(1) On replacing parts or units, always turn the power OFF and then disconnect AC input cable power supply plug from the power supply receptacle.

(2) Do not lose the removed screws and washers on replacing parts.

(3) When carrying PCB, wrap it by conductive sheet and pack it with shock protecting package.
(Do not use aluminum foil.)

(4) After replacing and/or repairing, check not only the repaired part but also loose connectors, and then check its operation.

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6. MAINTENANCE PARTS

This chapter describes the ASE maintenance parts and the tools for replacement. Consumables like floppy disk are not included. As for the replacement procedure, refer to "2.3 Detailed Configuration and Its Description" and "3.5 Emulation Memory Boards Installation".

6.1 Maintenance Parts List

The ASE maintenance parts are listed on Table 6-1. The table lists them on an assembly basis. The sales office should keep a proper quantity of each part taking both Mean Time Between Failures (MTBF) and shipment quantity into consideration.

(1) Normally at the first lot shipment, one set should be stored in the maintenance department. Apply the stored parts such as cables to the user for maintenance.

(2) The item of the circled number in the list is the general maintenance part depending on the balance of MTBF and shipment quantity.

Table 6-1 ASE Maintenance Parts List

No	Part Name	Factory Abb. #	Part Code	Necessary Stocks per Product			Price		Lead Time
				1-10	11-30	31-100	** (yen)	( )	
1	CONT BOARD PCB ASSY	HS180PWB30H	G074300	1	1	2	343,000		E
2	TRACE BOARD PCB ASSY	H680AS02T	G057800	1	1	2	298,500		E
3	BOX BOARD 0 PCB ASSY	HS180PWB00H	G074000	1	1	2	150,000		E
4	BOX BOARD 1 PCB ASSY	HS180PWB10H	G074100	1	1	2	200,000		E
5	BOX BOARD 2 PCB ASSY	HS180PWB20H	G074200	1	1	2	250,000		E
6	SDIL MPU CONNECTOR	HS180CUS2H	G073900	1	2	4	80,000		E
7	RS-232C(CRT) CABLE ASSY	P680CC02S	G058400	1	1	2	16,000		D
8	RS-232(HOST) CABLE ASSY	P680CH01S	G058500	1	1	2	16,000		D
9	PROBE CABLE ASSY	P680XPB1S	G058600	1	2	4	6,500		D
10	PRINTER CABLE ASSY	P680CP02S	G058700	1	1	2	19,500		D
11	BOX CABLE ASSY	P680CBX1S	G058800	1	1	2	52,500		D
12	FAN ASSY	P680XFN2S	G058900	1	1	2	9,000		D
13	GROUND ASSY	P680XCL1S	G059000	1	1	1	8,500		D
14	POWER SUPPLY (For 100-120V)	P180P100S	G063900	1	1	2	57,000		D
15	POWER SUPPLY (For 200-240V)	P180P200S	G064000	1	1	2	57,000		D
16	UL AC LINE CORD	P200CAC1S	G055800	1	1	1	7,000		D
17	CEE AC LINE CORD	P200CAC2S	G055900	1	1	1	7,000		D
18	BS AC LINE CORD	P200CAC4S	G056100	1	1	1	7,000		D
19	SDIL MPU IC SOKET	P180XDL1	G064100	1	2	4	5,000		D
20	FD CABLE	P180CF01	G064200	1	1	2	5,000		D
21	MICRO FDD	P180FDD1	G064300	1	1	2	80,000		D
22	JACKET CABLE ASSY	HS180PCJ01H	G071000	1	1	2	10,000		D

1) *: Refer to the price for each oversea office.
**: FOB Musashi Works

2) Lead Time: A - 1 month, B - 2 months, C - 3 months
D - 4 months, E - 5 months, F - 6 months

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6.2 Maintenance Tools

Table 6-2 shows the tools needed for replacement or inspection of maintenance parts.

Table 6-2 Maintenance Tools

No.	Name	Application
1	Phillips screwdriver, large	Screw removal
2	Phillips screwdriver, medium	Screw removal
3	Phillips screwdriver, small	Screw removal
4	Screwdriver, large	Front panel removal
5	Screwdriver, medium	
6	Screwdriver, small	Voltage adjustment
7	Circuit tester Digital voltmeter	AC/DC voltage check
8	Isopropyl alcohl	Edge connector cleaning
9	Gauze	Edge connector cleaning
10	Soapsuds	External surface cleaning
11	Tweezers	Spare
12	Conductive bag	Board packing
13	CRT	ASE function check (User system)
14	PC180	ASE function check (User system)
15	Printer	ASE-printer interface check
16	Oscilloscope	Measurement of TRIG signal during T&M excecution
17	Box wrench (M3)	Fuse replacement on the cold line side
18	Power supply	PC180 power supply(5V, 10A)
19	H680SD200	Host system

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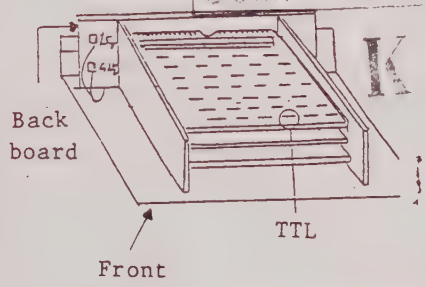
7. INSPECTION STANDARD

This chapter describes the checking items of the ASE inspection. For effective maintenance, check it according to its defective condition, working days and the user's own convenience on actual inspection and check. It is most preferable to inspect just before the expiration of free guarantee period (for one year after delivery). Table 7-1 shows the inspection standard. As for the procedure No. 3 and its following, refer to the section "9.5 Operating T&M".

Table 7-1 Inspection Standard

No.	Item	Standard	Description	Remarks
1	Cleaning	No dirt or dust	ASE station ·Remove all dirt, dust and other unnecessary things. ·Clean especially the air inlet, the fan and the air outlet. (Do not use organic thinner.)	
			Buffer box ·Remove all dirt, dust and other unnecessary things from inside the buffer box.	
2	Power supply voltage check	AC power input voltage 100V ± 10 %	Measure the power of the receptacle on the user side. Instrument : Digital voltmeter	
		DC power voltage +5V ± 1 %	Set the DC power voltage of any board installed in the ASE for the +5V TTL located farthest from the +5V power supply to be +5V ± 1%. (on the front side of the ASE)  	
3	Load test	No errors with T&M	Compare checksum data to see that T&M program is loaded normally from 3.5 inch floppy disk to the ASE.	
4	CONT RAM test	ditto	Check the RAM and the peripheral circuit of the control board. (i) PAUSE test (ii) MARCHING test	
5	CONT REG test	ditto	Execute R/W test of the control board register.	
6	SHARED RAM test	No errors with T&M	Check the SHARED RAM and its peripheral circuit of the trace board. (i) PAUSE test (ii) MARCHING test	

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No.	Item	Standard	Description	Remarks
7	ACV test	No errors with T&M.	Check the RAM and its peripheral circuit used in the address converter (ACV). (i) PAUSE test (ii) MARCHING test	
8	BM test	ditto	Check the RAM and its peripheral circuit used in the break memory (BM). (i) PAUSE test (ii) MARCHING test	
9	RAR test	ditto	R/W check of the record address register (RAR).	
10	TCR test	ditto	R/W check of the trace control register (TCR).	
11	TBM test	ditto	Check the trace buffer memory (TBM) and its peripheral circuit. (i) PAUSE test (ii) MARCHING test	
12	BQR test	ditto	R/W check of the break quality register (BQR).	
13	UAR test	ditto	R/W check of the user address register (UAR).	
14	BUFFER BOX test	ditto	Check the buffer box operation by setting a command packet into the SHARED RAM.	
15	FD test	ditto	Check FDD for 3.5 inch floppy disk and its peripheral circuit. (1) DISK FORMAT test (2) SEEK test (3) SEEK TRACK 0 test (4) RANDOM SEEK test (5) 55, AA R/W test (6) RANDOM DATA R/W test (7) WORST PATTERN R/W test	LDPASE 3.5" FD spec.
16	OPTION RAM test	ditto	Check the optional high-speed emulation memory board. (i) PAUSE test (ii) MARCHING test (iii) IMAGE test	
17	SU WINDOW test	ditto	R/W check by the WINDOW for emulation memory. (i) SINGLE SEGMENT test 1 (ii) SINGLE SEGMENT test 2 (iii) ALL SEGMENT test 1 (iv) ALL SEGMENT test 2	
18	SU step test	ditto	Check if the program in emulation memory is executed by STEP. Check the followings at every instruction execution. (1) RAR value (2) STM value (3) BSR value (4) TBM contents	

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No.	Item	Standard	Description	Remarks
19	SU RUN test	No errors with T&M	Check RUN and BREAK functions in the program on emulation memory. (i) ALL BREAK test (ii) NO BREAK test (iii) ADDRESS BREAK test (iv) DATA BREAK test (v) COUNT BREAK test	
20	SU BREAK test	ditto	Check the status and trace content at various breaks. (i) Normal break (ii) Forced break	
21	SU TRACE test	ditto	Check the trace function in the program execution on emulation memory.	
22	REGISTER test	ditto	R/W test of the MPU internal I/O register. (i) MMU R/W TEST (ii) IO RELOCATION TEST (iii) MPU DELAY CONTROL TEST (iv) SCVR TEST (v) HALT & SLEEP BREAK TEST (vi) DMA BREAK TEST (vii) ASCI TEST (viii) A18/TOUT TEST (ix) SU DMA TEST (x) DMA WRITE PROTECT TEST (xi) DMA BURST MODE TEST	
23	PU WINDOW test	ditto	R/W check for the memory of actual user space.	
24	PU STEP test	ditto	Check the program in actual user memory is executed by STEP. Check the following at every instruction execution. (1) RAR value (2) STM value (3) BSR value (4) TBM contents	
25	PU RUN test	ditto	Check RUN and BREAK functions in the program on the user memory. (i) ALL BREAK TEST (ii) NO BREAK TEST (iii) DATA BREAK TEST (iv) COUNT BREAK TEST	ADDRESS BREAK TEST is omitted
26	PU BREAK test	ditto	Check the status and trace content at various breaks of the program executed on user memory.	Same test spec as BREAK TEST
27	PU TRACE test	ditto	Check the trace function in the program executed on the user memory.	Same test spec as TRACE TEST

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No.	Item	Standard	Description	Remarks
28	PU SU CONTINUE test	No errors with T&M	Check the emulation by shifting program execution space continuously from the user memory to emulation memory, then back to user memory.	
29	CLOCK TRACE test	ditto	Check the trace data in the high-speed mode.	
30	TTL LOOP test	ditto	Check the TTL level port of the CRT interface.(Use the loop connector.)	
31	SWITCH test	ditto	Check the user system interface. (i) Reset input line (ii) Interrupt input line	
32	PROBE test	ditto	Check the external probe functions. (i) Probe break test (ii) Probe trace test	
33	BREAK KEY test	ditto	Check if a break occurs by pressing BREAK key on the CRT keyboard.	
34	OTHER LINE test	ditto	Check the user system interface during emulation. (i) BUS REQ (ii) INT 0,1,2	
35	CRES test	No errors with T&M	Check if pulses are output from the TRIG pin in cycle reset mode. (Use oscilloscope.)	
36	TRIG test	ditto	Check if pulses are output from the TRIG pin in trigger mode. (Use oscilloscope.)	
37	USER RUN test	ditto	Check if it is normal operation during emulation of the user side firmware.	
38	NO CLOCK test	ditto	Check if the monitor senses the stop of the user clock and displays it.	
39	PRINTER LOOP test	ditto	Check if it is normal operation of the printer circuit.	
40	ASCI0 & CSI0 test	ditto	Check ASCI0, CSI0 of the MPU and its peripheral functions.	
41	DREQ 0.1 test	ditto	Check DREQ 0 pin, DREQ 1 pin functions and its peripheral circuit.	
42	FUNCTION test	ditto	Check direction control of CKA0/DREQ0 and CKA1/TEND0. (i) Input direction control test (ii)Output direction control test	
43	MPU TYPE test	ditto	Check MPU operates normally for each MPU type.	

[redacted]

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8. DIAGNOSTIC FUNCTION

The ASE has a test program to be executed at power on reset on the control board.

With the power ON, the ASE displays the following on the screen.

```
ASE MONITOR Vm.n                                  ---------- (1)
COPYRIGHTED BY HITACHI, LTD. 1985
TESTING
 RAM 01234                                        ---------- (2)
SYSTEM MEMORY TEST

 ASE SYSTEM MEMORY xxxxx  (&xxxKB)                ---------- (3)
```

(1) This is the starting message. Vm.n indicates the version number.

(2) Tests the ASE system RAM (256KB). Divides the RAM into five units and numbers 0 to 4 as follows.

0 ----- $0 to $FFFF	1 ----- $10000 to $1FFFF
2 ----- $20000 to $2FFFF	3 ----- $30000 to $37FFF
4 ----- $38000 to $3FFFF	

(3) Tests high-speed emulation memory (H680SM01S).
Divides the memory into four units by 64KB and numbers 0 to 3 (0 to 7 for two boards) as follows.

0 ----- $800000 to $80FFFF	1 ----- $810000 to $81FFFF
2 ----- $820000 to $82FFFF	3 ----- $830000 to $83FFFF
4 ----- $840000 to $84FFFF	5 ----- $850000 to $85FFFF
6 ----- $860000 to $86FFFF	6 ----- $870000 to $87FFFF

Displays the possible size for emulation in the last parenthesized part.

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Display at error

```
ASE MONITOR  Vm.n
COPYRIGHTED BY HITACHI, LTD. 1985.
TESTING
 RAM 012                                                    ----------①
 **RAM ERROR ADDR = $△△△△△△  W - DATA = xxxxxx  R - DATA = xxxxxx

 SYSTEM MEMORY TEST

 ASE SYSTEM MEMORY 01                        (64KB)         ----------②
 **RAM ERR ADDR = $△△△△△△  W - DATA = xxxxxx  R - DATA = xxxxxx

 **CBR ERROR  W - DATA = xxxx   R - DATA = xxxx             ----------③
 **TCR ERROR  W - DATA = xxxx   R - DATA = xxxx             ----------④
 **BQR ERROR  W - DATA = xxxx   R - DATA = xxxx             ----------⑤
 **RAR ERROR  W - DATA = xxxx   R - DATA = xxxx             ----------⑥
 **TBM ERROR  W - DATA = xxxx   R - DATA = xxxx             ----------⑦
 **RAR//CLR   ERROR                                         ----------⑧
```

① Result of RAM R/W check
  Addresses $0 to $1FFFF are checked as OK.
  At address $△△△△△△ WRITE data is not the same as READ data.

② Result of READ after WRITE check of high-speed emulation memory
  At address $△△△△△△ WRITE data is not the same as READ data.
  Therefore, addresses $800000 to $80FFFF (64KB) are available.

③ A data verify error occurs in R/W of CBR.

④ A data verify error occurs in R/W of TCR.

⑤ A data verify error occurs in R/W of BQR.

⑥ A data verify error occurs in R/W of RAR.

⑦ A data verify error occurs in R/W of TBM.

⑧ The 11th bit in RAR cannot be cleared.

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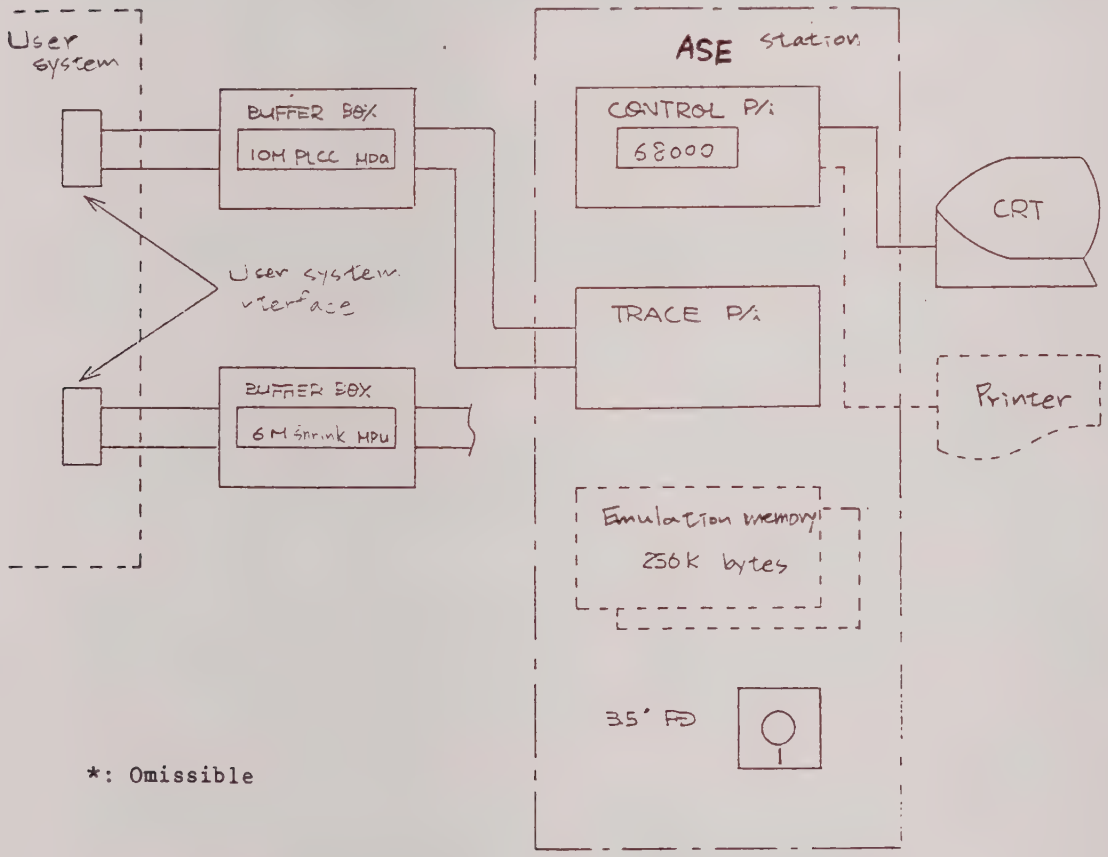
9. T&M OUTLINE AND PROCEDURE

T&M, an option of the development system H680SD200, checks the ASE functions and makes maintenance easy.

9.1 System Configuration

The test system configuration of the ASE is shown below:



*: Omissible

Fig. 9-1 Test System Configuration

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9.2 T&M Outline

The T&M requires the following equipments:

(1) ASE station (evaluation module: option)
(2) Buffer box
(3) CRT (RS232C spec ... SD200 etc)
(4) User system
(5) Printer: option

The T&M is included in a 3.5-inch floppy disk. (The T&M is supplied to user with a floppy disk.) Start and operate the T&M according to the following procedure. Use the 3.5-inch FDD on the main module of the ASE station.

(1) Load the T&M program from the 3.5-inch floppy disk to the control board RAM of the ASE station.

(2) Execute tests on the ASE.

(3) Transfer test result to a CRT.

(4) Print test results on a printer.

After loading the T&M, (2) to (4) are performed repeatedly. You may pull the T&M floppy disk out of the FDD on the ASE station.
Note that (4) is omissible.

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9.3 Selecting Test System

You can use any of three test systems for the T&M.

(1) <ASE system alone> test (ASE only test)

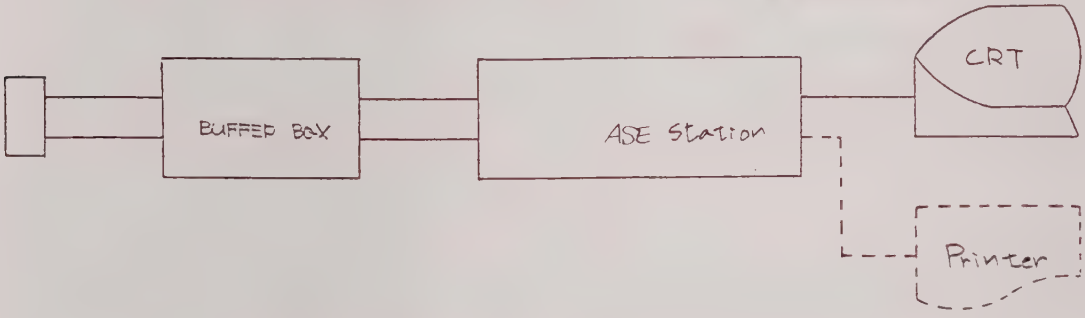

Fig. 9-2 ASE Only Test System Configuration

User system is not used in this test.
Test results is displayed on a CRT, or output to a printer if specified.
After the test is started, the test becomes endless loop test without operator intervention unless an error occurs.
When an error occurs, if printer output is not specified, the test halts (error stop), but if printer output is specified, you can make the test continue in spite of an error.

The following options are available:

(a) Emulation memory test
(b) Output on a printer (or test continuation in spite of an error)

(2) <ASE system + fixed user system> test (ASE + fixed user test)

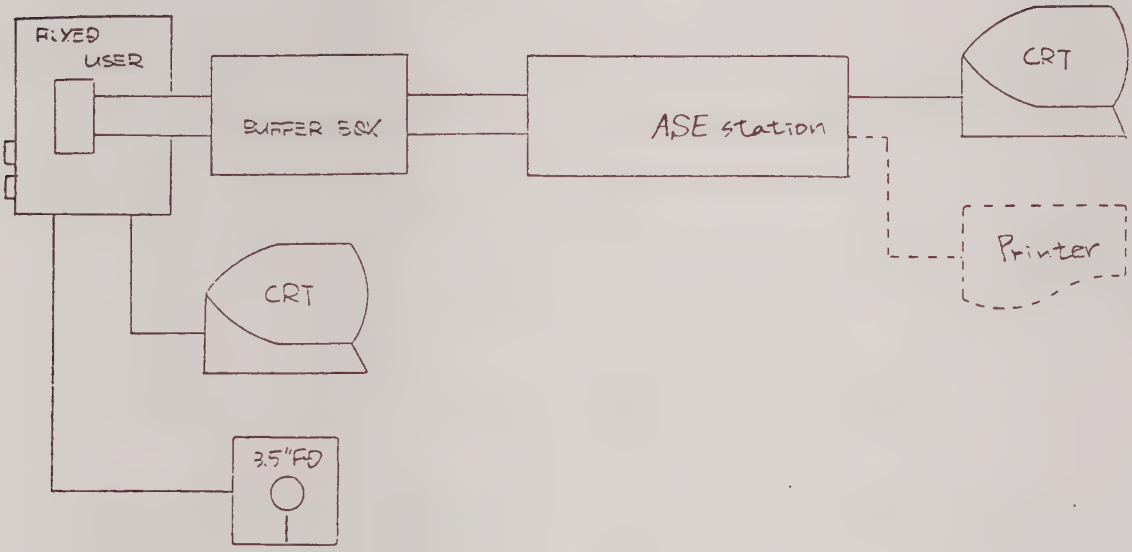

Fig. 9-3 ASE + Fixed User Test System Configuration

PC180 system board , a CRT, and a FD compose a fixed user system.
The result is displayed on a CRT, or output to a printer if specified.
The test is executable with or without operator intervention.
Test with operator intervention requires operator's manipuration after user system switch is pushed. It terminates in 1 loop.
Test without operator intervention becomes endless loop test unless an error occurs.
When an error occurs, if printer output is not specified, the test halts (error stop), but if printer output is specified, you can make the test continue in spite of an error.

The following options are available:

(a) Emulation memory test
(b) Output on a printer (or test continuation in spite of an error)
(c) Operation/ non-operation

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(3) <ASE system + free user system> test (ASE + free user test)

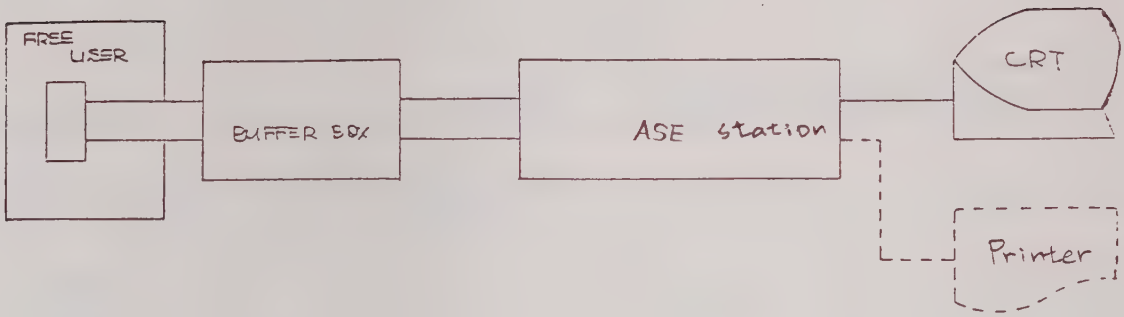

Fig. 9-4 ASE + Free User Test System Configuration

A free user system is required in this test. Note that the user system should have RAM of 4k bytes or more.

The result is displayed on a CRT, or output to a printer if specified.

When an error occurs, if printer output is not specified, the test halts (error stop), but if printer output is specified, you can make the test continue in spite of an error.

The following options are available:

(a) Emulation memory test
(b) Output on a printer (or test continuation in spite of an error)
(c) User system area to be tested

(4) User system specifications for <ASE system + free user system> test

When executing the T&M with a free user system, the user system should meet the following requirements.

(a) Has 4k bytes or more serial RAM area
(b) Has a user clock
(c) Interrupt line, BUSREQ, DREQ, or RESET cannot be input during the T&M execution.
(d) Addresses from $00 to $3F can be set for internal I/O area
(e) $FF of I/O area is accessible independent of the T&M.

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9.4 Test Items

The T&M consists of 41 test items. They are listed on Table 9-1.

Table 9-1 Test Items List

No.	Item	General specification	Execution by test mode			Remarks
			ASE ONLY	ASE+FIXED	ASE+FREE	
1	LOAD TEST	Compare tansferred data by sum check	Yes	Yes	Yes	
2	CONT RAM TEST	Pause and marching test	Yes	Yes	Yes	
3	CONT REG TEST	R/W test of register in control board	Yes	Yes	Yes	
4	SHARED RAM TEST	Pause and marching test	Yes	Yes	Yes	
5	ACV TEST	ditto	Yes	Yes	Yes	
6	BM TEST	ditto	Yes	Yes	Yes	
7	RAR TEST	R/W test	Yes	Yes	Yes	
8	TCR TEST	R/W test	Yes	Yes	Yes	
9	TBM TEST	Pause and marching test	Yes	Yes	Yes	
10	BQR TEST	R/W test	Yes	Yes	Yes	
11	UAR TEST	R/W test	Yes	Yes	Yes	
12	BUF BOX TEST	Test packet transmit check	Yes	Yes	Yes	
13	FD TEST	3.5-inch FD R/W check	Yes*	Yes*	Yes*	
14	OPTION RAM TEST	Pause and marching test	Yes*	Yes*	Yes*	
15	SU WINDOW TEST	R/W test	Yes	Yes	Yes	
16	SU STEP TEST	Trace data test after single-step	Yes	Yes	No	
17	SU RUN TEST	Trace data test after RUN	Yes	Yes	No	
18	SU BREAK TEST	Break function check	Yes	Yes	No	
19	SU TRACE TEST	Trace function check	Yes	Yes	No	
20	REGISTER TEST	MPU internal I/O register check	Yes	Yes	No	
21	PU WINDOW TEST	R/W test of user system	No	Yes	Yes	
22	PU STEP TEST	Single-step test of user system	No	Yes	Yes	
23	PU RUN TEST	RUN test of user system	No	Yes	Yes	
24	PU BREAK TEST	Break function check of user system	No	Yes	Yes	
25	PU TRACE TEST	Trace function check of user system	No	Yes	Yes	
26	PUSU CONTINUE TEST	Continuous test of user system memory and emulation memory	No	Yes	No	
27	CLOCK TRACE TEST	Clock trace mode test	No	Yes	No	
28	HOST I/F LOOP TEST	Loop test of host interface	No	Yes*	No	
29	SWITCH TEST	Reset and NMI switch test	No	Yes*	No	
30	PROBE TEST	External probe test	No	Yes*	No	
31	BREAK KEY TEST	Break test by BREAK key on CRT	No	Yes*	No	
32	OTHER LINE TEST	BUSTEQ and INT0 to INT2 test	No	Yes*	No	
33	CRES TEST	Cycle reset trigger test	No	Yes*	Yes	
34	TRIG TEST	Trigger output test by trigger mode	No	Yes*	Yes	
35	USER RUN TEST	User's firmware RUN test	No	Yes*	No	
36	NO CLK TEST	User system down detection test	No	Yes*	No	

- continued

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No.	Item	General specification	Execution by test mode			Remarks
			ASE ONLY	ASE+FIXED	ASE+FREE	
37	PRINTER LOOP TEST	Printer interface loop test	Yes*	Yes*	Yes*	
38	ASCI0 & CS I/O TEST	ASCI channel loop test and CS I/O test	No	Yes*	No	
39	DREQ 0,1 TEST	DREQ0 and DREQ1 line check	No	Yes*	NO	
40	FUNCTION TEST	CKA0/DREQ0, CKA1/TEND0 direction control test	No	Yes*	No	
41	MPU TYPE TEST	MPU type switching operation test	No	Yes*	No	

*: depending on specification

(Note 1) Tests 28 to 36 and 38 to 41 require operator intervention. They are executed only when ASE + FIXED USER test is selected and the operation is specified. Note that if operation is specified, the test does not become endless loop.

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9.5 Operating T&M

9.5.1 System connection and power supply

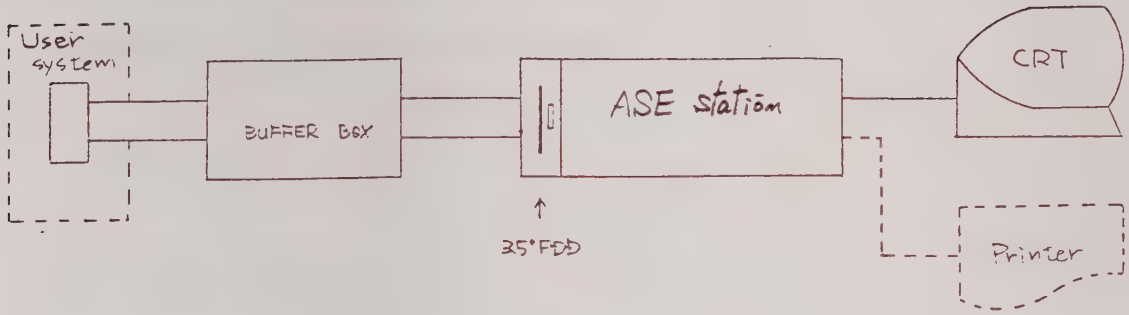

Fig. 9-5 System Connection

Connect a user system (omissible), a CRT (RS-232C spec, 9600 BPS, without parity, 2 stop bit), and a printer to ASE.

Apply the power in the following order:

(1) CRT
(2) Printer (if exists)
(3) User system (if exists)
(4) ASE station

9.5.2 Loading T&M

When H180AS02 is powered on, the following message appears on a CRT connected to H180AS02.

```
ASE MONITOR Vv.r
COPYRIGHTED BY HITACHI, LTD.  1985
TESTING
  RAM 01234
SYSTEM MEMORY TEST

  ASE SYSTEM MEMORY   xxxx (& xx KB)

START ASE
  S: START ASE
  R: RELOAD & START ASE
  H: HOST TERMINAL MODE
     (S/R/H) ? _ ←cursor
```

When "(S/R/H)?" appears, insert the T&M floppy disk to 3.5-inch FDD and enter as follows. Then the T&M is loaded.

```
(S/R/H)? [R↵]
```

* Enter the enclosed part.

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9.5.3 T&M Operation and Execution

After the T&M is loaded, the following message appears on a CRT connected to H180AS02. An operator should enter the test system selecting number and MPU type according to test system.

```
HS180ASE02H TEST AND MAINTENANCE PROGRAM
            VER NO. = V.rr
                  - - → T&M main title

 PRINTER USING (Y/N)? [Y↵]
                  - - → Y: A printer is used.
                        N: A printer is not used.
```

Here, if "Y" is entered, the following message appears:

```
ERROR CONTINUE (Y/N)? [Y↵]
                  - - → Y: Test continues in spite of an error
                        N: Test halts when an error occurs
```

If "N" is entered, the following message appears:

```
PRINTER LOOP TEST (Y/N)? [Y↵]
                  - - → Y: Loop test is executed
                        N: Loop test is not executed

    If "Y" is entered, the following message appears:

LOOP CONNECTOR SET
```

```
TEST MODE
   1. ASE ONLY
   2. ASE + FIXED USER
   3. ASE + FREE USER
MODE NO. = [1↵]
                  - - → Specify test mode
                        1: ASE system alone
                        2: ASE + fixed user
                        3: ASE + free user
```

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If "3" is selected, the following message appears:

```
USER RAM TOP ADDRESS = $**000 ?  [20↵]
                  - - → Enter the upper 2 digits of top address of user
                        system RAM

   (Example)
     PC180 .... [02↵]
     PC831 ... '02 ↵
     PC831JR .. [40↵]
```

If "2" or "3" is selected, the following message appears:

```
MPU TYPE
   1. R0 TYPE
   2. R1 DIL TYPE
   3. R1 PLCC TYPE

TYPE NO. = [1_↵]
            - - → Specify MPU type to be tested.
                   1: 6 MHz ....  normal
                   2: 8.10 MHz .. shrink type
                   3: 8.10 MHz .. PLCC type
```

```
OPTION MEMORY EXIST (Y/N) ? [Y_↵]
            - - → Specify whether option RAM exists.
                   Y: Option RAM exists.
                   N: Option RAM does not exist.
```

If "Y" is entered, the following message appears:

```
OPTION MEMORY
  TOP ADDRESS = $8*0000 ? [0_↵]
  END ADDRESS = $8*FFFF ? [3_↵]
            - - → Enter address according to the number of option RAMs.
                   One RAM:  Enter "0" and "3".
                   Two RAMs: Enter "0" and "7".
```

If "2" (ASE + FIXED USER) is selected as test mode, the following message appears:

```
OPTION TEST (Y/N) [N_↵]
            - - → Y: Operation test is executed.
                   N: Operation test is not executed.
```

If "Y" is entered, the following message appears:

```
SWITCH TEST MODE (Y/N) ? [N_↵]
            - - → Y: SWITCH TEST MODE is executed.
                  N: SWITCH TEST MODE is not executed.

Note: When switch test mode is specified, only switch test is performed.
      (Test Nos. = 29, 32, and 39)
```

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If SWITCH TEST MODE is not specified, the following message appears:

```
FD TEST EXECUTE (Y/N)?  [Y_↵]
              - - → Y: FD TEST is executed.
                    N: FD TEST is not executed.
```

If "Y" is entered, the following message appears:

```
1. FD FORMAT              5. 55 AA R/W
2. NORMAL SEEK            6. RANDOM DATA R/W
3. SEEK TRACK ZERO        7. WORST PATTERN R/W
4. RANDOM SEEK            8. HEATRUN (1-7 CONTINUE)

TEST NO (1, 2, 3, 4, 5, 6, 7, 8) = [1 2 3 ↵]
              - - → Enter test No. (1 to 8)
```

```
START (Y/N ) ? [Y_↵]
              - - → Y: Start test execution.
                    N: Returns to T&M main title display.
```

Then the T&M is started, When an error occurs, the T&M halts with an error message, and the ASE becomes command input wait state. (">" is displayed except the case when test continuation is specified.)

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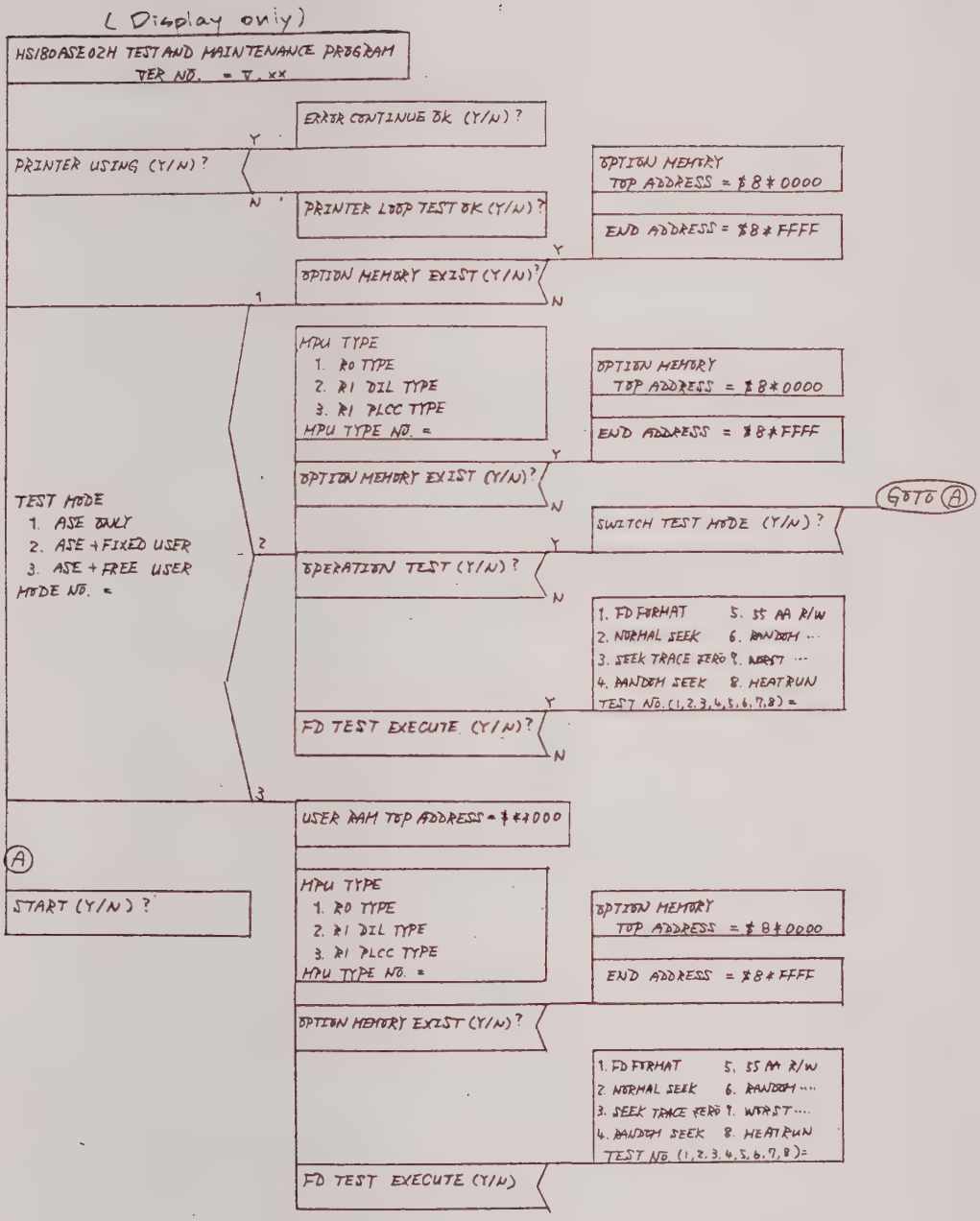
(Display only)
HS/80ASE02H TEST AND MAINTENANCE PROGRAM
TER NO. = V.xx
ERROR CONTINUE OK (Y/N) ?
PRINTER USING (Y/N) ?
PRINTER LOOP TEST OK (Y/N) ?
OPTION MEMORY
TOP ADDRESS = $8*0000
END ADDRESS = $8*FFFF
OPTION MEMORY EXIST (Y/N) ?
MPU TYPE
1. R0 TYPE
2. R1 DIL TYPE
3. R1 PLCC TYPE
MPU TYPE NO. =
OPTION MEMORY
TOP ADDRESS = $8*0000
END ADDRESS = $8*FFFF
OPTION MEMORY EXIST (Y/N) ?
GOTO (A)
SWITCH TEST MODE (Y/N) ?
TEST MODE
1. ASE ONLY
2. ASE + FIXED USER
3. ASE + FREE USER
MODE NO. =
OPERATION TEST (Y/N) ?
1. FD FORMAT 5. 55 AA R/W
2. NORMAL SEEK 6. RANDOM ...
3. SEEK TRACE ZERO 7. WORST ...
4. RANDOM SEEK 8. HEAT RUN
TEST NO. (1,2,3,4,5,6,7,8) =
FD TEST EXECUTE (Y/N) ?
USER RAM TOP ADDRESS = $E1000
(A)
START (Y/N) ?
MPU TYPE
1. R0 TYPE
2. R1 DIL TYPE
3. R1 PLCC TYPE
MPU TYPE NO. =
OPTION MEMORY
TOP ADDRESS = $8*0000
END ADDRESS = $8*FFFF
OPTION MEMORY EXIST (Y/N) ?
1. FD FORMAT 5. 55 AA R/W
2. NORMAL SEEK 6. RANDOM ....
3. SEEK TRACE ZERO 7. WORST ....
4. RANDOM SEEK 8. HEAT RUN
TEST NO (1,2,3,4,5,6,7,8) =
FD TEST EXECUTE (Y/N)

Fig. 9-6 PAD for T&M Operation

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```
    HS1804SE02H TEST AND MAINTENANCE PROGRAM
                VER NO. = 1.00

      ERROR CONTINUE
FD TEST = ,,,8
COUNT 0001 TEST 01  LOAD TEST                    OK
COUNT 0001 TEST 02  CONT RAM TEST
T&M AREA R/W TEST              OK
FREE AREA R/W TEST             OK
ASE STACK AREA R/W TEST        OK
CONTRAM IMAGE CHECK            OK
COUNT 0001 TEST 03  CONT REG TEST                OK
COUNT 0001 TEST 04  TRACE RAM TEST1              OK
COUNT 0001 TEST 05  TRACE RAM TEST2              OK
COUNT 0001 TEST 06  TRACE RAM TEST3              OK
COUNT 0001 TEST 07  TRACE REG TEST1              OK
COUNT 0001 TEST 08  TRACE REG TEST2              OK
COUNT 0001 TEST 09  TRACE RAM TEST4              OK
COUNT 0001 TEST 10  TRACE REG TEST3              OK
COUNT 0001 TEST 11  TRACE REG TEST4              OK
COUNT 0001 TEST 12  BUFBOX CHECK                 OK
COUNT 0001 TEST 13  FD TEST
    TEST0  3.5 FD HEATRUN TEST
    TEST1  3.5 FD FORMAT TEST                        OK
    TEST2  3.5 FD NORMAL SEEK TEST                   OK
    TEST3  3.5 FD SEEK TRACK ZERO TEST               OK
    TEST4  3.5 FD RANDOM SEEK TEST                   OK
    TEST5  3.5 FD 55,AA READ/WRITE TEST              OK
    TEST6  3.5 FD RDM DATA READ/WRITE TEST           OK
    TEST7  3.5 FD WORST DATA READ/WRITE TEST         OK
COUNT 0001 TEST 15  SERVICE RAM TEST1
BU SINGLE SEGMENT TEST..OK
BU ALL SEGMENT TEST.....OK
COUNT 0001 TEST 16  TRACE TEST1                  OK
COUNT 0001 TEST 17  TRACE TEST2                  OK
COUNT 0001 TEST 18  TRACE TEST3                  OK
COUNT 0001 TEST 19  TRACE TEST4                  OK
COUNT 0001 TEST 20  MPU REGISTER TEST
MMU R/W TEST                   OK
I/O RELOCATION TEST            OK
NON DELAY CYCLE TEST           OK
SOVR CHECK                     OK
HALT & SLEEP BREAK TEST        OK
DMA BREAK TEST                 OK
ASCI TEST                      OK
AT BREAK TEST                  OK
AIB/TOUT TEST                  OK
DMA WRITE PROTECT TEST         OK
DMA BURST MODE TEST            OK
```

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Fig. 9-7 T&M Message Output

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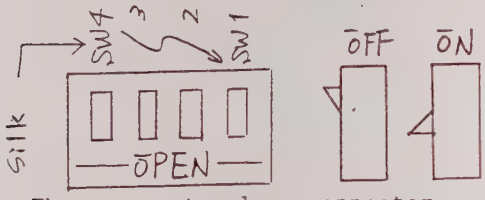
9.5.4 Test with operator Intervention

(a) HOST I/F LOOP TEST (TEST 28)

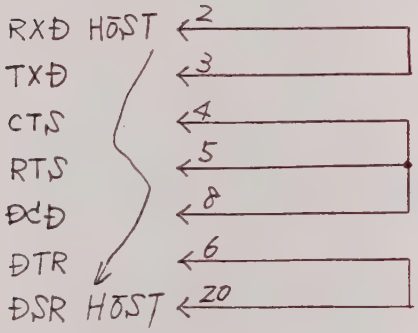
```
COUNT 0001 TEST 28 HOST I/F LOOP TEST
DIP SWITCH = xx
HOST I/F LOOP CONNECTOR SET OK  ?  Y (CR)
OK
```

This test checks host interface function and DIP SW. When the message above appears, an operator compares DIP SW value and displayed data according to the following table.



Then connect a loop connector to the host connector. When "Y ↘ " or "↘" is entered, host I/F loop test is executed. If there is no error, "OK" is displayed.

Data	SW4	SW3	SW2	SW1
00	ON	ON	ON	OFF
02	ON	ON	OFF	OFF
04	ON	OFF	ON	OFF
06	ON	OFF	OFF	OFF
08	OFF	ON	ON	OFF
0A	OFF	ON	OFF	OFF
0C	OFF	OFF	ON	OFF
0E	OFF	OFF	OFF	OFF



(b) SWITCH TEST (TEST 29)

```
COUNT 0001 TEST 29 SWITCH TEST
RESET SW TEST ——— OK ———→ (1)
NMI SW TEST ——— OK ———→ (2)
```

When the message above appears, turn the switch on/off. Then the test result is displayed ("OK" on the right). The switches are on PC180.

RESET SW (S2) ——→ On and off.
NMI SW (S1) ——→ Repeat on and off twice.

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(c) PROBE TEST (TEST 30)

```
COUNT 0001 TEST 30  PROBE TEST
PROBE GND OK ?  Y (CR)
OK
PROBE SET OK ?  Y (CR)
OK
```

When executing this test, EXT cables are required.

① Connect the probes No. 1 to No. 8 to GND. Then enter "Y (CR)" and execute the test.

② Connect the probes No. 1 to No. 8 to D0 to D7 of user system. Then enter "Y(CR)".

(d) BREAK KEY TEST (TEST 31)

```
COUNT 0001 TEST 31  BREAK KEY TEST
PUSH BREAK KEY   OK
```

When this message appears, push the BREAK key.

(e) OTHER LINE TEST (TEST 32)

```
COUNT 0001 TEST 32 OTHER LINE TEST
BUSREQ LINE CHECK
CHECK BUSACK LED ON OK ? (CR) ———— ①
CHECK BUSACK LED OFF OK ? (CR) ———— ②
OK
INT0 LINE CHECK ——— OK ———— ③
INT1 LINE CHECK ——— OK ———— ④
INT2 LINE CHECK ——— OK ———— ⑤
```

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Switch on/off on PC180, and test result is displayed ("OK" on the right).

① Turn BUSREQ SW (S) on and check BUSACK LED (D25) goes on. Then enter "(CR)".

② Turn BUSREQ SW (S) off and check BUSACK LED (D25) goes off. Then enter "(CR)". Then test result is displayed.

③ Turn INST0 SW (S3) on and check INT0 LED (D10) goes on. Then test result is displayed.

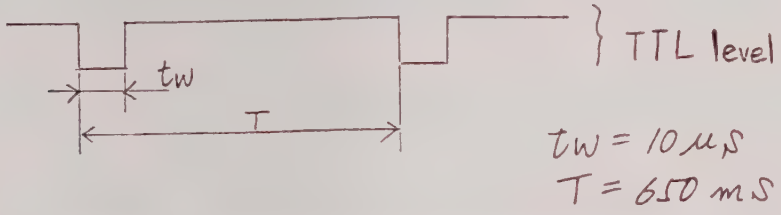
④ Repeat the procedure ③ for INT1 and INT2. Switches and LEDs are as follows:

INT1 SW ... S4	INT1 LED ... D11
INT2 SW ... S5	INT2 LED ... D12

(f) CRES TEST (TEST 33)

```
COUNT 0001 TEST 33 CRES TEST          END
```

Check by an oscilloscope that the following trigger pulse is output from TRIG pin by cycle reset function.

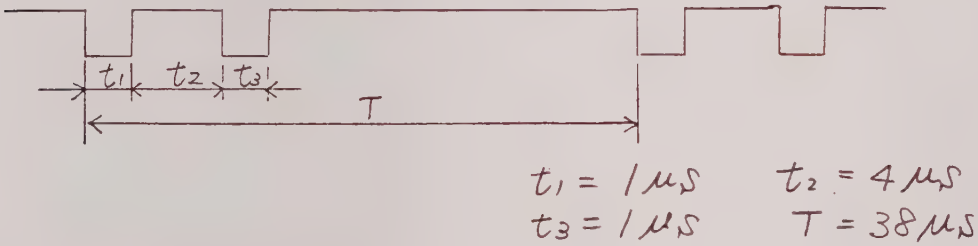


The break key of a CRT ends this test.

(g) TRIG TEST (TEST 34)

```
COUNT 0001 TEST 34 TRIG TEST          END
```

Check by an osilloscope that the following trigger pulse is output from TRIG pin by trigger function.



The break key of a CRT ends this test.

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(h) USER RUN TEST (TEST 35)

```
COUNT 0001 TEST 35 USER RUN TEST
SET CRT TERMINAL & SET SYSTEM DISK OK?   Y (CR)  ---- (1)
*** FD BOOT START ! ***
IF BOOT END THEN HIT TP (CR) ON PC180 KEYBOARD
   OK?  Y (CR)  ------------------------------------ (2)
*** PC 180 INTERNAL TEST EXECUTING! ***
   IF TEST END THEN HIT (BREAK) KEY ---------------- (3)
END
```

The test checks that the monitor ROM of user system starts CP/M.

① Check that a CRT and 3.5-inch floppy disk are connected to PC180 correctly. Then enter "Y (CR)" to the ASE CRT.

② Check PC180 ends loading from the floppy disk (":_" is displayed in "2. PC180 message when system disk is started"

③ Operate PC180 according to "3. PC180 message at 'TP'" and check ":_ " appears. Then enter the break key.
"END" is displayed not only when the break key is entered but also when the test halt abnormally.
(":_" on the PC180 CRT indicates the test ends normally.)

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1. PC180 message at POWER ON

```
"PC180 MONITOR   version V.r
        1986 July, 18  Alpha  Electronic Co"
```

2. PC180 message when system disk is started

```
"PC180 operating system version V.rr
     by alpha electronic Co. Ltd.
     in 1986 8. 3

System main memory area presents as following
     monitor = 00000h - 01fffh for monitor program
     sram    = 02000h - 02fffh for monitor work
     dram    = 40000h - 7ffffh for system work

System mmu setting as following
     common0 = 0000h - 2fffh for 00000h - 02fffh
     bank    = 3000h - 7fffh for 40000h - 44fffh
     common1 = 8000h - ffffh for 50000h - 57fffh

:_"
  cursor
```

Note: After a prompt ":" appears, the ASE becomes command input wait state.

3. PC180 message at 'TP' (for PLCC)
(Enter the underlined part.)

```
:TP ↵

rom check sum test      ok
system ram test         ok
dynamic ram test
  ram area set 40000h - 7ffffh

mpu = plcc type (Y/N) ?    Y ↵
  rom area set 80000h - bffffh

ok

    printer test execute?  Y or N ↵
```

Enter "Y" or "N". Then "PC180 message at POWER ON", or "PC180 message when system disk is started" appears, and ":_____".

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(i) NO CLOCK TEST (TEST 36)

```
COUNT 0001 TEST 36 NO CLOCK TEST
USER SYSTEM POWER OFF —— OK          ——— (1)
USER SYSTEM POWER ON OK?  Y (CR)     ——— (2)
OK
```

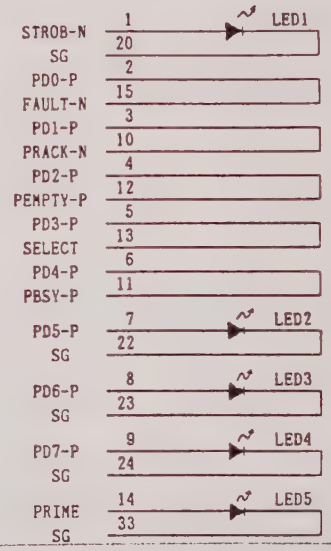
(1) After the message above appears, turn PC180 power off. Then "OK" is displayed on the right.

(2) After PC180 power on, enter "Y (CR)" to the ASE CRT. If the test ends normally, "OK" is displayed.

(j) PRINTER LOOP TEST (TEST 37)

```
COUNT 0001 TEST 37 PRINTER LOOP TEST
WRITE = FF
WRITE = 00
OK
```

The test does not require operator intervention, but you should check LED going on/off. Attach a loop connector to the ASE printer interface. Check that all LEDs (LED1 to LED5) go on only when "WRITE =FF" is displayed on the CRT.



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(k) ASCI0 & SI/O TEST (TEST 38)

```
COUNT 0001 TEST 38 ASCI0 & SI/O TEST
ASCI CHANNEL 0 LOOP TEST
LOOP CONNECTOR SET TO CHANNEL 0 TO CONNECTOR  OK?  Y (CR)  — (1)
OK
CSI/O TEST          OK                                    ——— (2)
```

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The test consists of ASCI0 test and CSI/O test.

(1) ASCI0 test
Connect a loop connector used in TEST 28 to P3 connector of PC180. Then enter "Y (CR)" on ASE CRT.
"OK" is displayed when the test ends normally.

(2) CSI/O test
The test does not require operator intervention. "OK" is displayed when the test ends normally.

(l) DREQ 0, 1 TEST (TEST 39)

```
COUNT 0001 TEST 39 DREQ 0, 1 TEST
DREQ 0 & DREQ 1 LINE CHECK
I/O --→ MEMORY DMA CHECK —— OK ------ ①
DMA CH0 BURST MODE CHECK —— OK ------ ②
```

The test consists of DREQ 0 or DREQ 1 line test, and burst mode DMA test.

① DREQ 0, 1 line test
After the message above appears, turn DREQ CHECK SW (S7) on and check that D14 goes on. "OK" is displayed when the test ends normally.

② DMA burst mode test
Turn DREQ CHECK SW (S7) off and check that D14 goes off. "OK" is displayed when the test ends normally.

(m) MPX FUNCTION TEST (TEST 40)

```
COUNT 0001 TEST 40 FUNCTION TEST
CHECK CKA0/DREQ0 LED ON & CHECK CKA1/TEND0 LED ON
        THEN PUSH BREAK KEY !!                          ..... ①
DMA TEST (AFTER ASCI REGISTER SET)  OK
CKA0 INPUT MODE CHECK               OK
CKA1 INPUT MODE CHECK               OK
CHECK CKA0/DREQ0 LED OFF & CHECK CKA1/TEND0 LED OFF OK? (CR)  ..... ②
DMA MODE NON CANCEL TEST            OK
ASCI REGISTER KEEP TEST             OK
CHECK CKA0/DREQ0 LED ON & CHECK CKA1/TEND0 LED ON OK?  (CR)  ..... ③
OK
```

The test checks direction control of CKA0/DREQ0 and CKA1/TEND0. Check that LEDs go on/off normally.

CKA0/DREQ0 LED D24
CKA1/TEND1 LED D23

① Check that D24 goes on and D23 goes off, and push the BREAK key.

② Check that D24 goes off and D23 goes on, and enter (CR).

③ Check that both D23 and D24 go on, and enter (CR). "OK" is displayed when the test ends normally.

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(n) MPU TYPE TEST (TEST 41)

```
COUNT 0001 TEST 41 MPU TYPE TEST
MPU TYPE TEST              OK
WRITE SETUP MARGIN CHECK OK
REFRESH TRACE CHECK        OK
```

The test does not require operator intervention. "OK" is displayed when the test ends normally.

9.5.5 Terminating T&M

When operation tests are terminated, "EXECUTE TEST ALL END!!" is displayed. Then if the BREAK key is entered, ">" is displayed, and the ASE enters debug mode.

Or, the test are executed repeatedly unless an error occurs. Powering off the ASE ends the tests.

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10. ERROR DISPLAY

10.1 Display Format

If an error is detected during the execution of each test, the error is displayed in the following format.

Table 10-1 Display Format

Format	Display	Test No.
1	COUNT xxxx TEST 01 LOAD TEST MPU TYPE = x ---------- MPU type when an error occurs STATUS = xxxx ---------- Error status ADDRESS = xxxxxx ---------- Address where an error is detected NORMAL DATA = xxxx ---------- Normal value data ERROR DATA = xxxx ---------- Error data If data is accessed by byte, the low-order bytes are displayed by asterisks as follows: xx**	1 to 11 14, 15 17, 18 20, 21 27 to 30 32, 34 36, 38 41
2	COUNT xxxx TEST 12 BUFBOX CHECK NG MPU TYPE = x ---------- MPU type when an error occurs STATUS = xxxx ---------- Error status COMMAND = xxxxxxxx xxxxxxxx MESSAGE = xxxxxxxx xxxxxxxx xxxxxxxx COMMAND means the commands sent from the control board to the buffer box. The first 8 letters indicate the command type, and the next 8 letters indicate the message size. MESSAGE means the response of the buffer box to the control board. The first 8 characters indicate the return code, the next 8 characters indicate the message size, and the last 8 characters indicate: At ROM error : Checksum value At RAM error : A RAM address where an error is detected. Others : Indefinite	11 to 41
3	COUNT xxxx TEST TRACE TEST 2 NG MPU TYPE = x ---------- MPU type when an error occurs STATUS = xxxx ---------- Error status RAR = xxxx xxxx STM = xxxx xxxx xxxx xxxx BSR = xxxx xxxx ECR = xxxx xxxx xxxx xxxx xxxx xxxx TBM 1 = xxxx xxxx xxxx xxxx xxxx xxxx TBM 2 = xxxx xxxx xxxx xxxx xxxx xxxx TBM 3 = xxxx xxxx xxxx xxxx xxxx xxxx TBM 4 = xxxx xxxx xxxx xxxx xxxx xxxx	16 to 41

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Format	Display	Test No.
	(Notes) · As for RAR to TBM 4, a half of the display on the left indicates normal value data, and the other half indicates error data. · As for STM, the first four characters on the left indicate SR value, the next four on the right indicate PCH value. · As for ECR, the first word is the high-order word. · As for TBM, the first four characters indicate the final trace value, the next two words indicate the high-order and low-order word of checksum.	
4	COUNT xxxx TEST LOOP TEST LOOP CONNECTOR OK? NG MPU TYPE = x ---------- MPU type when an error occurs STATUS = xxxx ---------- Error status	11 to 41
5	COUNT xxxx TEST SWITCH TEST NG MPU TYPE = x ---------- MPU type when an error occurs STATUS = xxxx ---------- Error status NORMAL DATA = xxxxxxxx ------ Normal value data ERROR DATA = xxxxxxxx ------- Error data	31 to 40

10.2 Error Status

The error status determines and shows the place where the error has probably occurred, according to errors detected by the T&M. The place where the error has occurred is divided as follows.

Table 10-2 Status Code and Fauly Part

No.	Status code	Fauly part
1	1000---	Control board error
2	2000---	Trace board error
3	3000---	Buffer box error
4	4000---	Option RAM error
5	5000---	User system error

The following shows detailed status information.

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Table 10-3 ASE T&M Error Status (CONTROL board)

Status	Desctiption	Test No.
1001	T&M CHECK SUM ERROR	1
1002	CONT RAM R/W ERROR	2
1003	EMRQ NOT CLEAR	3
1004	MONITOR REG 2 CHECK ERROR	3
1005	CBR R/W ERROR	3
1006	CMPXR R/W ERROR	3
1007	CSTR BERR NOT OCCURRED	3
1008	NO MEM BIT ABNORMAL	3
1009	ECR R/W ERROR	3
100B	MONITOR REG 1 COMPARE ERROR	36
100D	HOST I/F BAUD RATE ERROR	28
100E	HOST I/F PARITY ERROR	28
100F	HOST I/F OVERRUN ERROR	28
1010	HOST I/F FLAMING ERROR	28
1012	MONITOR REGISTER RES BIT ABNORMAL	29
1016	MONITOR REGISTER MREQ BIT ABNORMAL	32
1018	ECR2 COUNT ERROR	34
1019	PRINTER I/F STAUS ERROR	37
101A	PRINTER INTERRRUPT ERROR	37
1101	HOST I/F CHARACTER COMPARE ERROR	28
1020	CONT RAM IMAGE CHECK ERROR	2
1021	CONT ROM CHECK SUM ERROR	1
1022	MONITOR ADDRESS COMPARE ERROR	29

Table 10-4 ASE T&M Error Status (TRACE board)

Status	Description	Test No.
2001	SHARED RAM R/W ERROR	4
2002	BREAK MEMORY R/W ERROR	6
2003	ACV R/W ERROR	5
2004	RAR R/W ERROR	7
2005	TCR R/W ERROR	8
2006	TBM R/W ERROR	9
2007	BQR R/W ERROR	10
2009	OPTION RAM WINDOW R/W ERROR	15
200A	OPTION RAM WINDOW ADDRESS ERROR	15
200B	OPTION RAM IMAGE CHECK ERROR	15
200C	TRACE DATA CHECK ERROR	16 to 39
200D	BREAK STATUS ERROR	16 to 39
200E	TAVAIL BIT NOT FOUND	27, 30
200F	AS BIT NOT FOUND	27, 30
2010	AS BIT NOT OFF OVER RAR	27, 30
2011	ADDRESS COUNT COMPARE ERROR	27, 30
2012	DATA COUNT COMPARE ERROR	27, 30
2013	STM COMPARE ERROR	31
2014	PROBE COUNT COMPARE ERROR	30
2015	SHARED RAM IMAGE ERROR	4
2309	BU WINDOW R/W ERROR	15
230A	BU WINDOW ADDRESS ERORR	15

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Table 10-5 ASE T&M Error Status (BUFFER BOX)

Status	Description	Test No.
3001	EMRQ TIME OUT	11 to 41
3002	BUFBOX RUN TIME OUT	11 to 41
3003	BUFBOX MESSAGE ERROR	11 to 41
3004	CBR BREAK BIT ABNORMAL	11 to 41
3005	BUFBOX TIME OUT ERROR	11 to 41
3007	WRITE PROTECT ERROR	18
3008	USER RESET LINE ABNORMAL	29
3009	USER NMI LINE ABNORMAL	29
300A	WRITE PROTECT BREAK NOT OCCURRED	29
300B	USER MASREQ LINE ABNORMAL	32
300D	USER SYSTEM RUNNING AFTER POWER OFF	36
3010	USER INT0 LINE ABNORMAL	32
3011	USER INT1 LINE ABNORMAL	32
3012	USER INT2 LINE ABNORMAL	32
3108	REF DISABLE MODE UAR R/W ERROR	11
3208	REF ENABLE MODE UAR R/W ERROR	11
320F	TEND0 BREAK NOT OCCURRED	35
32F8	LONG REF CYCLE MODE UAR R/W ERROR	11
3D01	MMU R/W ERROR	20
3D22	I/O RELOCATION ERROR	20
3D23	SCVR CHECK ERROR	20
3D25	DMA MEMORY R/W ERROR	18
3D26	DMA MEMORY IMAGE ERROR	18
3D2A	ASCI CH0 BREAK STATUS ERROR	38
3D2B	CS I/O BREAK STATUS ERROR	38
3E01	ABNORMAL USER INTERRUPT LINE	32
3FF1	BUFBOX DMA BREAK PC ERROR	39
3D27	DMA WRITE PROTECT ERROR	20
3D28	SLEEP TIME OUT NOT OCCURRED	29
3A01	TIME OUT MODE MCR OVERLAP ERROR	20
3A02	INTERNAL I/O R/W ERROR	20
3300	BUFFER BOX USER PROGRAM NOT EXECUTE	40
3A04	WRITE SETUP MARGIN CHECK ERROR	41
3B01	REFRESH BIT NOT FOUND	41
3B02	MF BIT NOT FOUND	41
3B03	REFRESH MODE ADDRESS ERROR	41
3C01	CPU MODE REGISTER R/W ERROR	12

Table 10-6 ASE T&M Error Status (OPTION RAM)

Status	Desctiption	Test No.
4001	NO MEMORY AREA BUS ERROR NOT OCCRED	14
4002	OPTION RAM R/W ERROR	14

Table 10-6 ASE T&M Error Status (USER)

Status	Desctiption	Test No.
5001	USER RAM R/W ERROR	21
5002	USER RESET NOT CLEAR	29
5003	USER MASREQ NOT CLEAR	32

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10.3 Commands at Error Occurrence

In the T&M, when an error occurs and the test stops, the user can get the information in the ASE by inputting some simple commands for easy debugging.
Below are listed the command and its description.

Note 1: If you enter BREAK key or BUS error occurs when the ASE is command input wait state, error status will disappear.

Note 2: Set paramerters in hexadecimal.

Table 10-8 Commands at Error Occurrence

Command	Command syntax	Description
TM	>TM ↵	Returns the T&M to the initial state.
PR	>PR△;E ↵	Brings the printer to enable state.
	>PR△:D ↵	Brings the printer to disable state.
ERR	>ERR ↵	Displays error status.
	>ERR△;D ↵	Prevents from command input at error occurrence.
MD	>MD△ADR1△ADR2 ↵	Dumps ASE memory. Displays the contents of ADR1 to ADR2, when ADR1 < ADR2. Displays the contents of ADR1 to ADR1 + ADR2 when ADR1 > ADR2.
	>MD△ADR1△ADR2 ;E ↵	Dumps user memory. Same for ADR1 and ADR2.
M	>M△ADR△DATA ↵	Renews the contents of address ADR in the ASE memory.
	>M△ADR△DATA;U ↵	Renews the contnets of address ADR in user memory.
TBM	>TBM ↵	Displays the contents of TBM.
	>TBM△ RAR1△RAR2;E ↵	Displays the contents of TBM of RAR1 to RAR2.
ACV	>ACV△ADR1 ↵	Displays physical address corresponding to logical address ADR1.
	>ACV△ADR1 △ ADR2 ↵	Sets logical assress ADR1 to physical address ADR2.
CLK	>CLK ↵	Displays the set clock mode.
	>CLK△;6 ↵	Sets the clock mode to ASE 6MHz.
	>CLK△;9 ↵	Sets the clock mode to ASE 9MHz.
	>CLK△;U ↵	Sets the clock mode to USER clock.
	This command is effective to input RESET to the buffer box.	
EM	>EM ↵	Displays whether or not EMRQ is issued from the buffer box.
	>EM△;D ↵	Negates EMOK.
	>EM△;E ↵	Issues a command currently in a command packet.

(to be continued)

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Command	Command syntax	Description
	>EM△;O ↓	Issues sequentially a command currently in a command packet.
ASE	>ASE ↓	Passes control to the ASE firmware.
BANK	>BANK ↓	Displays a trace bank currently set.
TEST	>TEST△n;D ↓	Prevents Test No. n from being executed.
	>TEST△n;E ↓	Bring Test No. n to be executed.
	>TEST△n;O ↓	Bring only Test No. n to be executed.
RTN	>RTN ↓	Continues the test next to the test where an error occurs.
GO	>GO△ADR ↓	Passes the MPU control on the CP side to a program by addresses shown as "ADR".
MAP	>MAP ↓	Displays the contents of MCR currently set.
	>MAP△ADR1△ADR2;n1;n2	Sets memory attributes. n1: attribute 1 n2: attribute 2
MPU	>MPU ↓	Displayes the current MPU type set at CPU mode reagister.
	>MPU△;n ↓	Sets MPU type. n: MPU type 1: 6 MHz 2: 8.10 MHz, shrink 3: 8.10 MHz, PLCC Z: Z-SEL ON (Z-VERSION) R: Z-SEL OFF (R-VERSION) W: WAITEN ON (WAIT) S: WAITEN OFF (No WAIT)
PCHK	>PCHK ↓	Checks pins.
DI	>DI ↓	Issues DI command.
MTST	>MTST△ADR1△ADR2△;n ↓	Tests memory from ADR1 to ADR2. n: initial value Input hexadecimal 00 to FF.
RCHK	>RCHK;n ↓	Checks RAM. n: mode 01, 02, 04, 09, 0C, 12, 14, 1A, 1C

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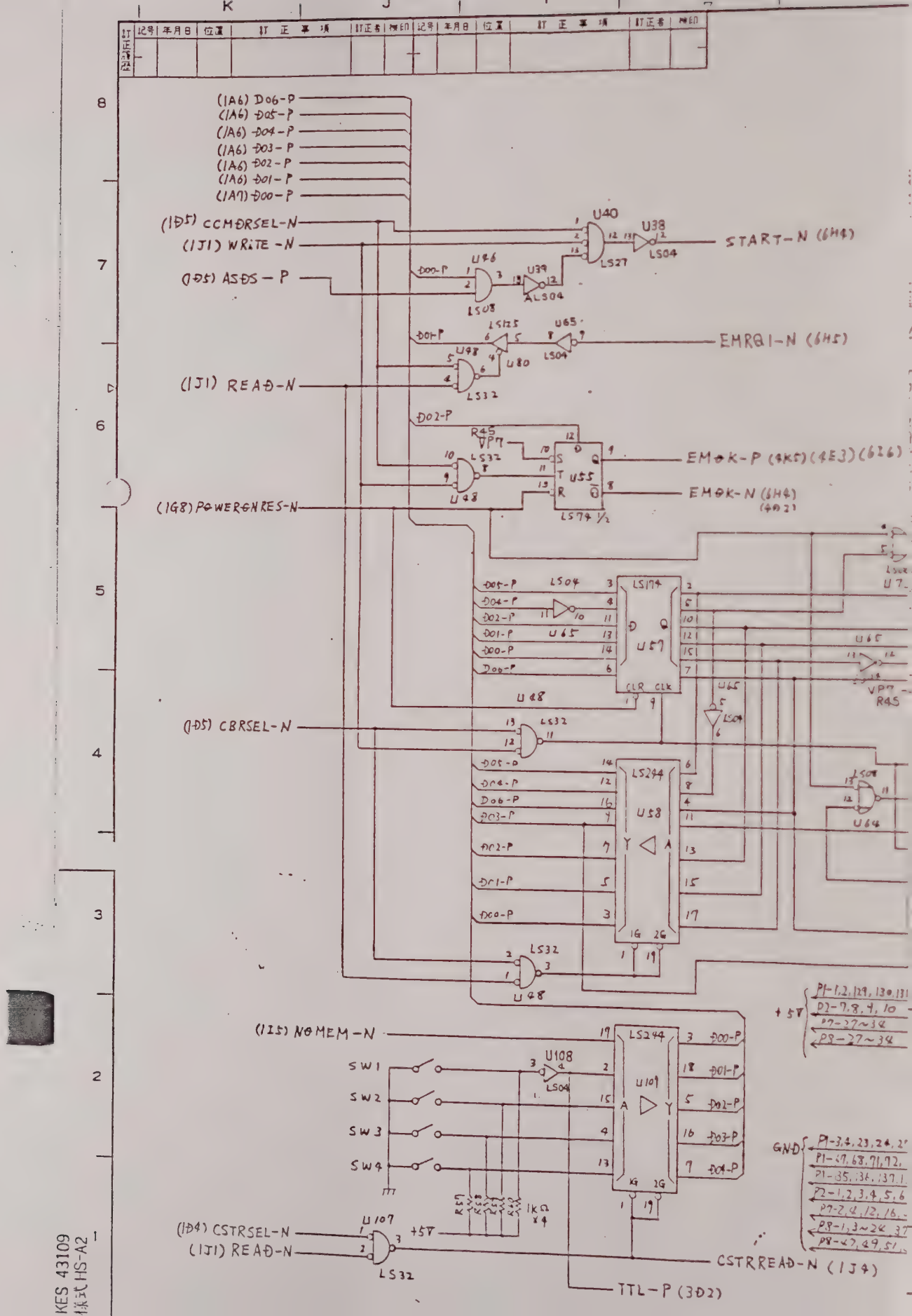

KES 43109
様式 HS-A2

C2LD 88665

HITACHI
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(1D4) ACTSETSEL-N
(1G8) POWERONRES-N
(1J4) SUPDATA-N
ACTSET-N (6H4)
ACTSEL-N (1H5)(4E4)
(ACT FLG-N)
(CMDRESET-N)
SSEL-P (6H4)
CMDRESET-P (6H5)
CBR-P (6H5)
UCLKMODE-P (6H5)
CRESEN-N (3E1)
16BIT-P (2K6)
BREAKKEY-P (6H5)
CBRSET-P (4G1)
RUNUSER-P (4E3)
16BIT-N (4J3)
(1E2) PRDTSEL-N
(1J2) LDS-N
(1J1) WRITE-N
(1E2) PRSTROBE-N
(1J1) READ-N
(1E2) PRCONTSEL-N
(1A7) D00-P
(1A6) D01-P
(1A6) D02-P
(1A6) D03-P
(1A6) D04-P
(1A6) D05-P
(1A6) D06-P
(1A6) D07-P
PD0-P
PD1-P
PD2-P
PD3-P
PD4-P
PD5-P
PD6-P
PD7-P
FAULT-N
PRACK-N
PEMPTY-P
SELECT-P
PBSY-P
PR-N (1A8)
STROBE-N
PRIME-N
POWERRANRES-N (1G8)
+5V
GND
C3 C12 33μ 10WV
0.022μ
0.022μ
R12 1K VP1 (1D6)(4F7)(1D8)(1B8)
R19 1K VP2 (7J5)(7G2)
R24 1K VP3 (7G8)(7J3)(7F6)
R29 1K VP4 (7J8)(7F6)(4H1)
R32 1K VP5 (6E7)(6D7)(6B7)(6C5)(3F8)
R44 1K VP6 (1J7)(7F8)(1A3)
R45 1K VP7 (SH7) (64)(16)(3J5)(3H5)(3E2)(6G3) (6B7)
R46 1K VP8 (1E4)(3F3)(1B5)
R50 1K VP9 (B7)(B4)(1J5)(1J3)
R51 1K VP10 (C3)(2C6)(2D6)(2E6)(2F6)(2J4)
R52 1K VP11 (2C5)(2D5)(2E5)(2F5)

DWN	A. Kikuta 86.8.21
CHKD	
APPD	
PROJECTION	
SCALE	NTS
TITLE	H180CONT02
HIS180ASE02H	
MUSASHI WORKS DWG. NO.	343
	6/8

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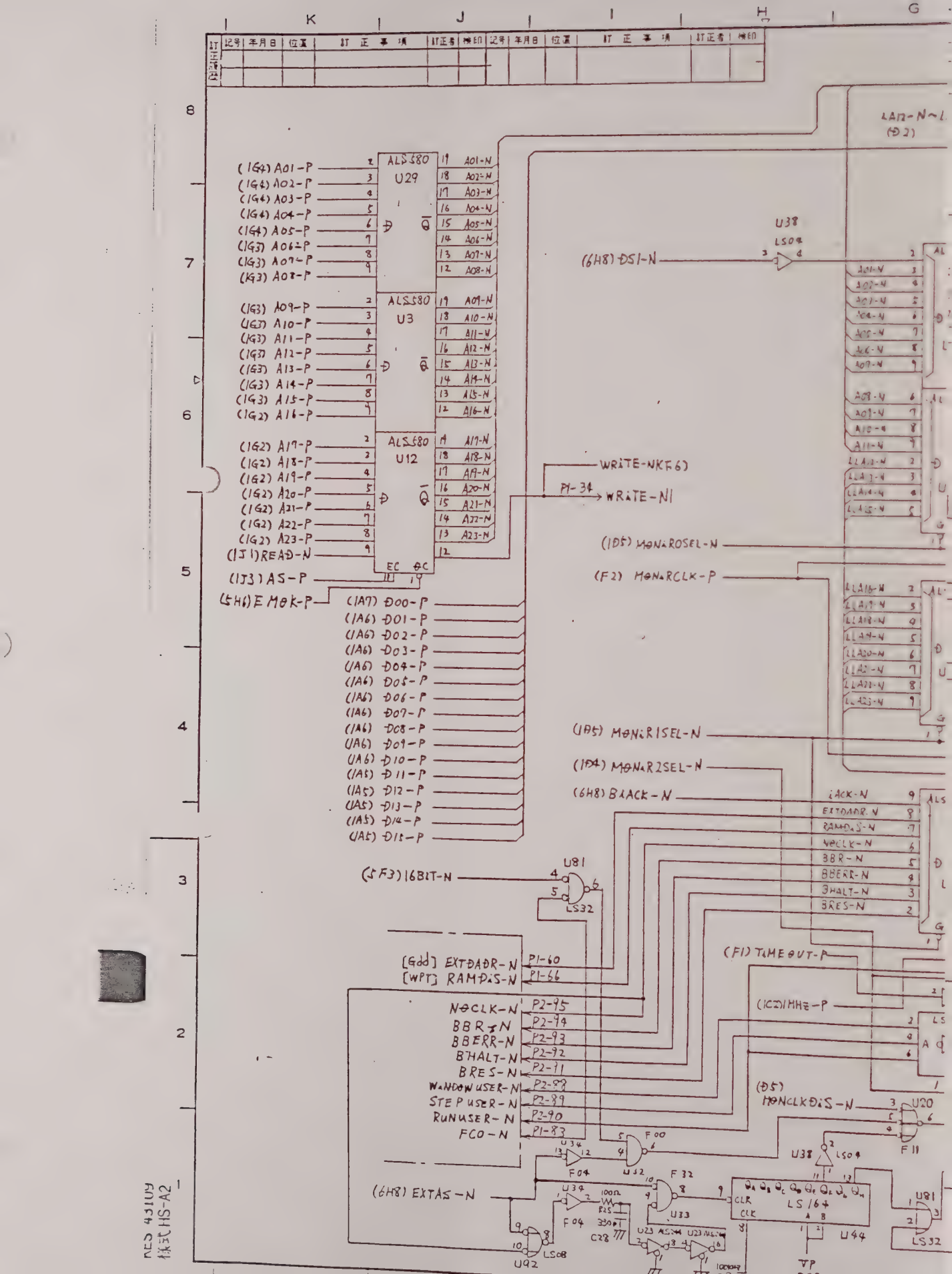
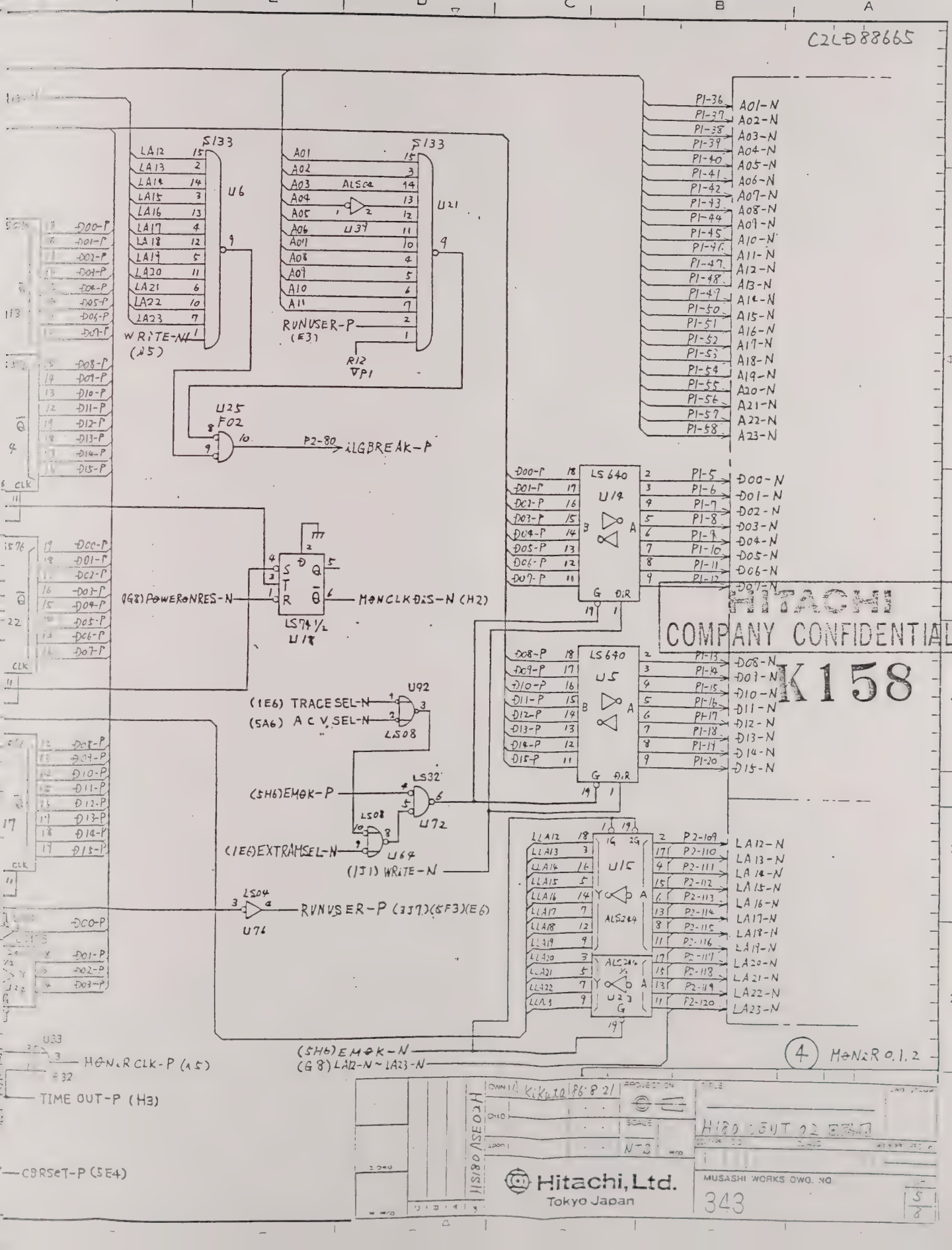

K
J
I
H
G
8
7
6
5
4
3
2
1
U29
ALS580
U3
U12
U38
LS04
U81
LS32
U20
U34
U32
U33
U44
U92
LS08
LS 164
(1G4) A01-P
(1G4) A02-P
(1G4) A03-P
(1G4) A04-P
(1G4) A05-P
(1G3) A06-P
(1G3) A07-P
(1G3) A08-P
(1G3) A09-P
(1G3) A10-P
(1G3) A11-P
(1G3) A12-P
(1G3) A13-P
(1G3) A14-P
(1G3) A15-P
(1G2) A16-P
(1G2) A17-P
(1G2) A18-P
(1G2) A19-P
(1G2) A20-P
(1G2) A21-P
(1G2) A22-P
(1G2) A23-P
(1J1) READ-N
(1J3) AS-P
(5H6) EMRK-P
(6H8) DS1-N
WRITE-N
(1D5) MONROSEL-N
(F2) MONRCLK-P
(1B5) MONR1SEL-N
(1D4) MONR2SEL-N
(6H8) BACK-N
(5F3) 16BIT-N
[6dd] EXTDADR-N
[WPT] RAMDIS-N
NOCLK-N
BBR-N
BBERR-N
BHALT-N
BRES-N
WINDOWUSER-N
STEPUSER-N
RUNUSER-N
FCO-N
(6H8) EXTAS-N
(F1) TIMEOUT-P
(1C2) 1MHz-P
(D5) MONCLKDIS-N
F00
F04
F32
F11
100Ω
330Ω
R25
C28
LAn-N~L
(D2)
NEC 43109
株式HS-A2

C2LD88665


S133
U6
LA12
LA13
LA14
LA15
LA16
LA17
LA18
LA19
LA20
LA21
LA22
LA23
WRITE-N
(J5)
S133
U21
A01
A02
A03
A04
A05
A06
A07
A08
A09
A10
A11
ALSC4
U39
RUNUSER-P
(E3)
R12
VP1
U25
F02
P2-80
iLGBREAK-P
P1-36
P1-37
P1-38
P1-39
P1-40
P1-41
P1-42
P1-43
P1-44
P1-45
P1-46
P1-47
P1-48
P1-49
P1-50
P1-51
P1-52
P1-53
P1-54
P1-55
P1-56
P1-57
P1-58
A01-N
A02-N
A03-N
A04-N
A05-N
A06-N
A07-N
A08-N
A09-N
A10-N
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A14-N
A15-N
A16-N
A17-N
A18-N
A19-N
A20-N
A21-N
A22-N
A23-N
D00-P
D01-P
D02-P
D03-P
D04-P
D05-P
D06-P
D07-P
LS640
U19
P1-5
P1-6
P1-7
P1-8
P1-9
P1-10
P1-11
P1-12
D00-N
D01-N
D02-N
D03-N
D04-N
D05-N
D06-N
D07-N
D08-P
D09-P
D10-P
D11-P
D12-P
D13-P
D14-P
D15-P
U5
P1-13
P1-14
P1-15
P1-16
P1-17
P1-18
P1-19
P1-20
D08-N
D09-N
D10-N
D11-N
D12-N
D13-N
D14-N
D15-N
(G8)PowerONRES-N
LS74 1/2
U18
M0NCLKDIS-N (H2)
(1E6) TRACESEL-N
(5A6) ACVSEL-N
U92
LS08
(5H6)EMBK-P
LS32
U72
LS08
U64
(1E6)EXTRAMSEL-N
(1J1) WRITE-N
LS04
U76
RUNUSER-P (3J7)(5F3)(E6)
U15
U23
ALS244
LLA12
LLA13
LLA14
LLA15
LLA16
LLA17
LLA18
LLA19
LLA20
LLA21
LLA22
LLA23
P2-109
P2-110
P2-111
P2-112
P2-113
P2-114
P2-115
P2-116
P2-117
P2-118
P2-119
P2-120
LA12-N
LA13-N
LA14-N
LA15-N
LA16-N
LA17-N
LA18-N
LA19-N
LA20-N
LA21-N
LA22-N
LA23-N
(5H6)EMBK-N
(G8)LA12-N ~ LA23-N
U33
M0N2R CLK-P (J5)
#32
TIME OUT-P (H3)
CBRSET-P (5E4)
4
M0N2R 0.1.2
HITACHI
COMPANY CONFIDENTIAL
K158
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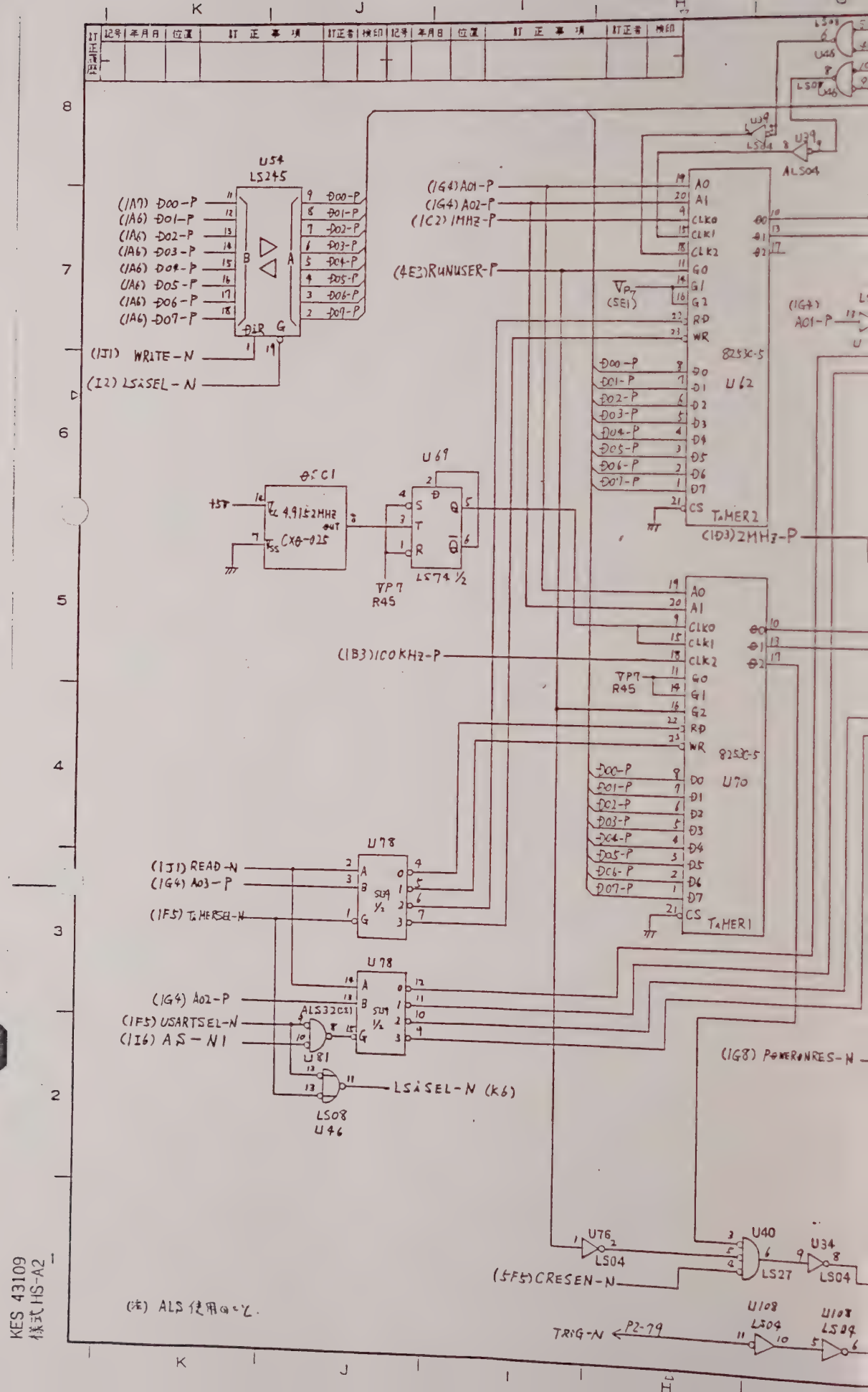
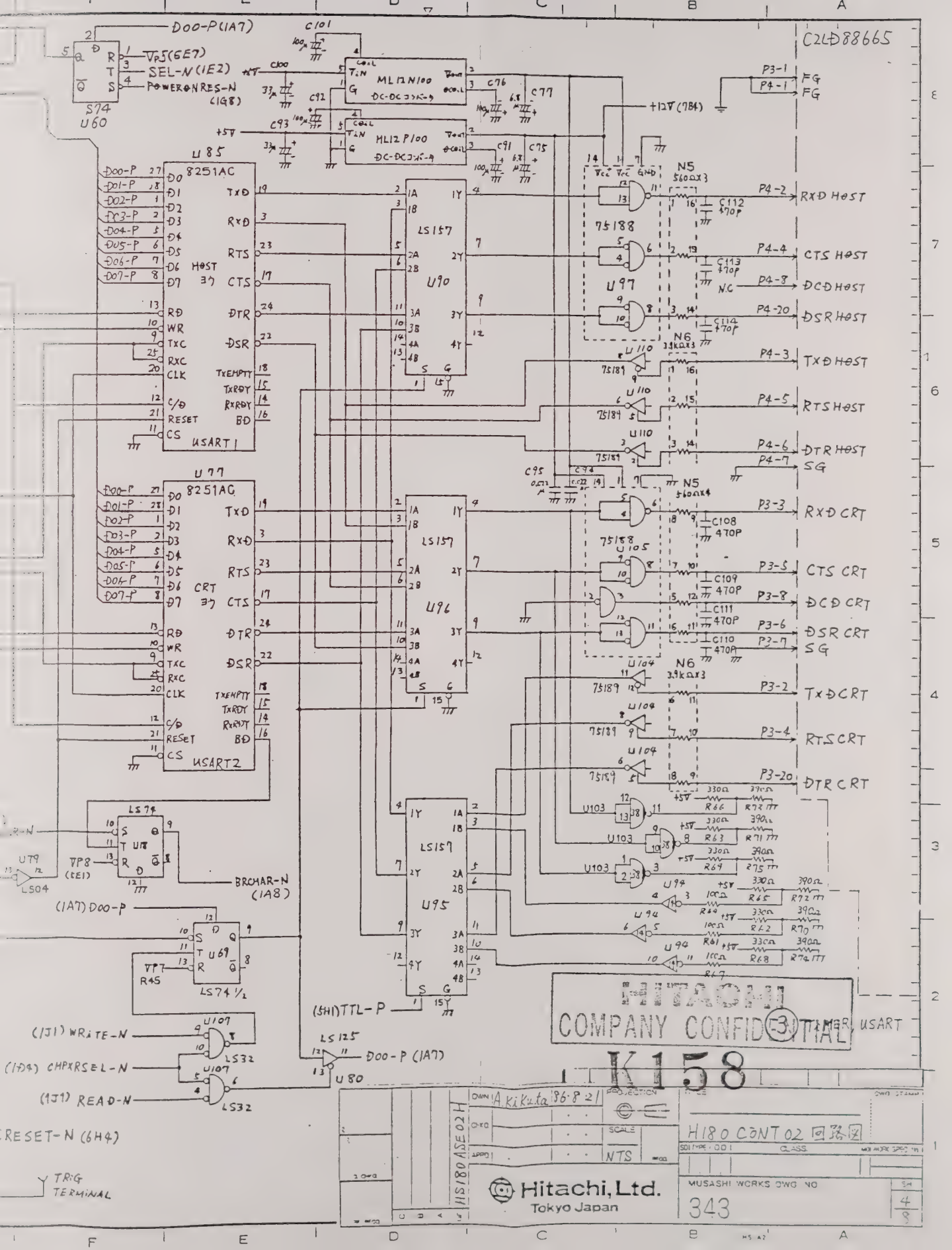
Tokyo Japan
MUSAKHI WORKS DWG. NO.
343


U54
LS245
(IA7) D00-P
(IA6) D01-P
(IA6) D02-P
(IA6) D03-P
(IA6) D04-P
(IA6) D05-P
(IA6) D06-P
(IA6) D07-P
DIR G
(IJ1) WRITE-N
(I2) LSASEL-N
(IG4) A01-P
(IG4) A02-P
(IC2) 1MHZ-P
(4E3) RUNUSER-P
VP7
(5E1)
8253C-5
U62
D00-P
D01-P
D02-P
D03-P
D04-P
D05-P
D06-P
D07-P
TIMER2
(ID3) 2MHZ-P
U69
5C1
4.9152MHZ
CXO-025
OUT
VP7
R45
LS74 1/2
(IB3) 100KHZ-P
U70
TIMER1
U78
(IJ1) READ-N
(IG4) A03-P
(IF5) TIMERSEL-N
LS04 1/2
(IG4) A02-P
(IF5) USARTSEL-N
(I6) AS-N1
ALS32(X1)
U81
LS08
U46
LSASEL-N (K6)
(IG8) POWERONRES-N
U76
LS04
U40
LS27
U34
LS04
(5F5) CRESEN-N
U108
LS04
TRIG-N
P2-79
(注) ALS使用のこと.
KES 43109
様式HS-A2


C2LD88665
8251AC
USART1
USART2
HOST
CRT
LS157
LS74
LS125
LS32
LS04
75188
75189
TXD HOST
RXD HOST
RTS HOST
CTS HOST
DTR HOST
DSR HOST
DCD HOST
SG
TXD CRT
RXD CRT
RTS CRT
CTS CRT
DTR CRT
DSR CRT
BRCHAR-N (IA8)
TTL-P (5H1)
RESET-N (6H4)
TRIG TERMINAL
WRITE-N (1J1)
CHPXRSEL-N (1D4)
READ-N (1J1)
HITACHI
COMPANY CONFIDENTIAL
TIMER, USART
K158
H180 CONT 02
MUSASHI WORKS DWG NO
343
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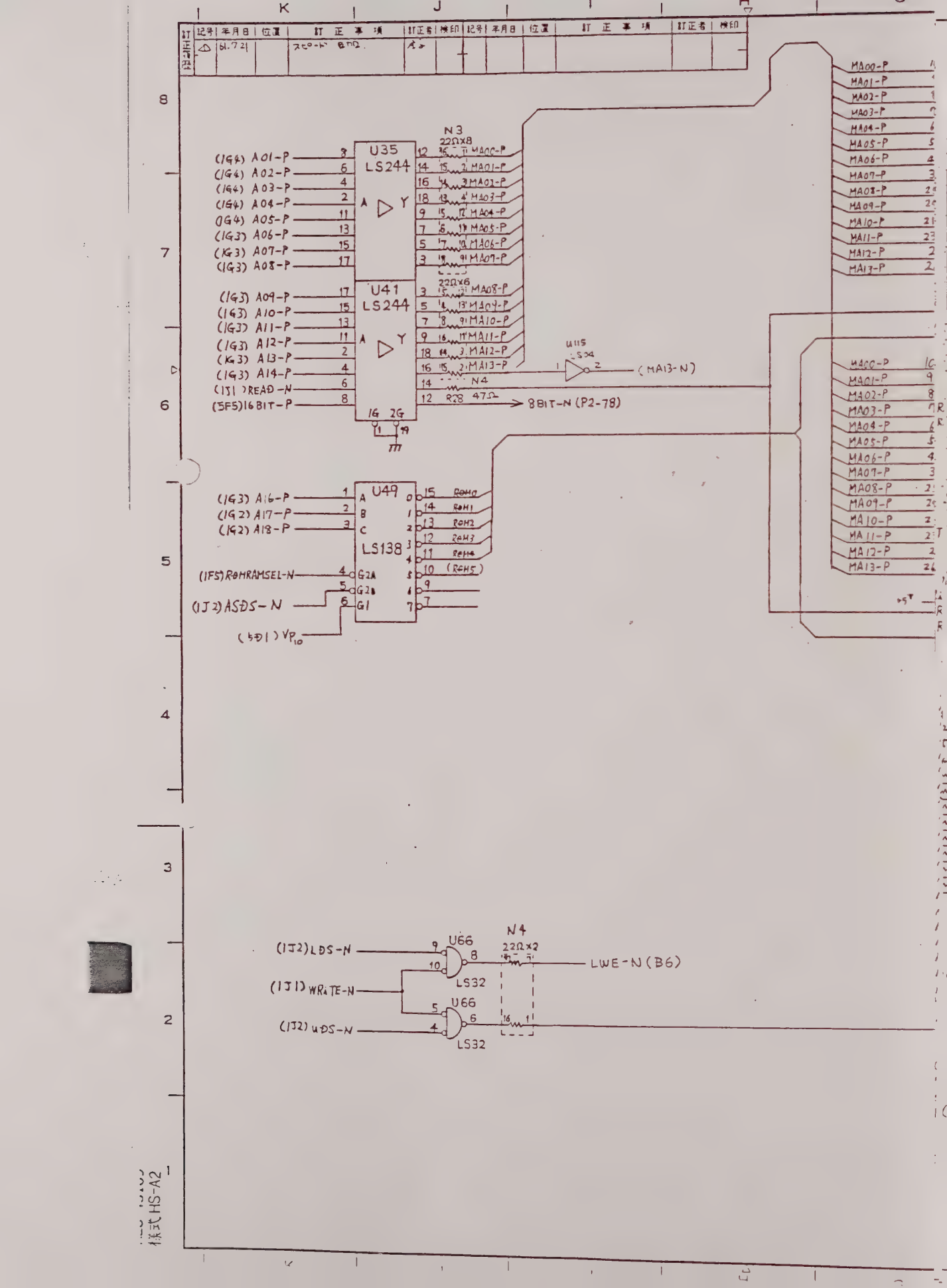
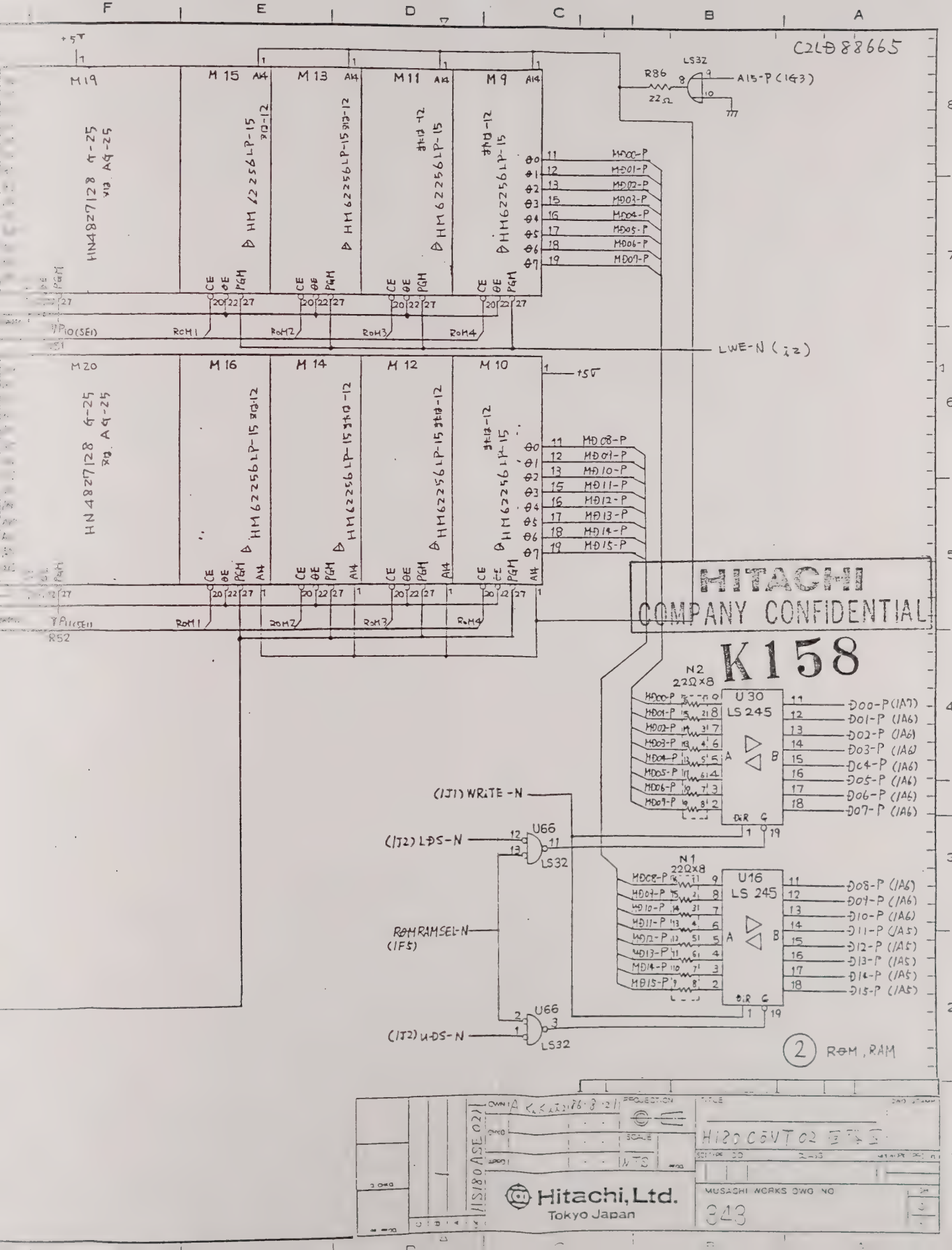

訂正
記号 年月日 位置 訂正事項 訂正者 検印
61.7.21
U35 LS244
U41 LS244
U49 LS138
N3 22Ω×8
N4 22Ω×2
U115 LS04
U66 LS32
(IG4) A01-P
(IG4) A02-P
(IG4) A03-P
(IG4) A04-P
(IG4) A05-P
(IG3) A06-P
(IG3) A07-P
(IG3) A08-P
(IG3) A09-P
(IG3) A10-P
(IG3) A11-P
(IG3) A12-P
(IG3) A13-P
(IG3) A14-P
(IJ1) READ-N
(5F5) 16BIT-P
(IG3) A16-P
(IG2) A17-P
(IG2) A18-P
(IF5) ROMRAMSEL-N
(IJ2) ASDS-N
(5D1) VP10
(IJ2) LDS-N
(IJ1) WRITE-N
(IJ2) UDS-N
MA00-P
MA01-P
MA02-P
MA03-P
MA04-P
MA05-P
MA06-P
MA07-P
MA08-P
MA09-P
MA10-P
MA11-P
MA12-P
MA13-P
(MA13-N)
8BIT-N (P2-78)
ROM0
ROM1
ROM2
ROM3
ROM4
(ROM5)
LWE-N (B6)
K
J
8
7
6
5
4
3
2
1


C2LD88665
M19
M15
M13
M11
M9
M20
M16
M14
M12
M10
HN48Z7128 G-25
HM62256LP-15
R86
22Ω
LS32
A15-P (1G3)
LWE-N (1Z)
+5V
MD00-P
MD01-P
MD02-P
MD03-P
MD04-P
MD05-P
MD06-P
MD07-P
MD08-P
MD09-P
MD10-P
MD11-P
MD12-P
MD13-P
MD14-P
MD15-P
ROM1
ROM2
ROM3
ROM4
HITACHI
COMPANY CONFIDENTIAL
K158
N2
22Ω×8
U30
LS 245
D00-P (1A7)
D01-P (1A6)
D02-P (1A6)
D03-P (1A6)
D04-P (1A6)
D05-P (1A6)
D06-P (1A6)
D07-P (1A6)
(1J1) WRITE-N
(1J2) LDS-N
U66
LS32
N1
22Ω×8
U16
LS 245
D08-P (1A6)
D09-P (1A6)
D10-P (1A6)
D11-P (1A5)
D12-P (1A5)
D13-P (1A5)
D14-P (1A5)
D15-P (1A5)
ROMRAMSEL-N
(1F5)
(1J2) UDS-N
2 ROM, RAM
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Tokyo Japan
MUSASHI WORKS DWG NO
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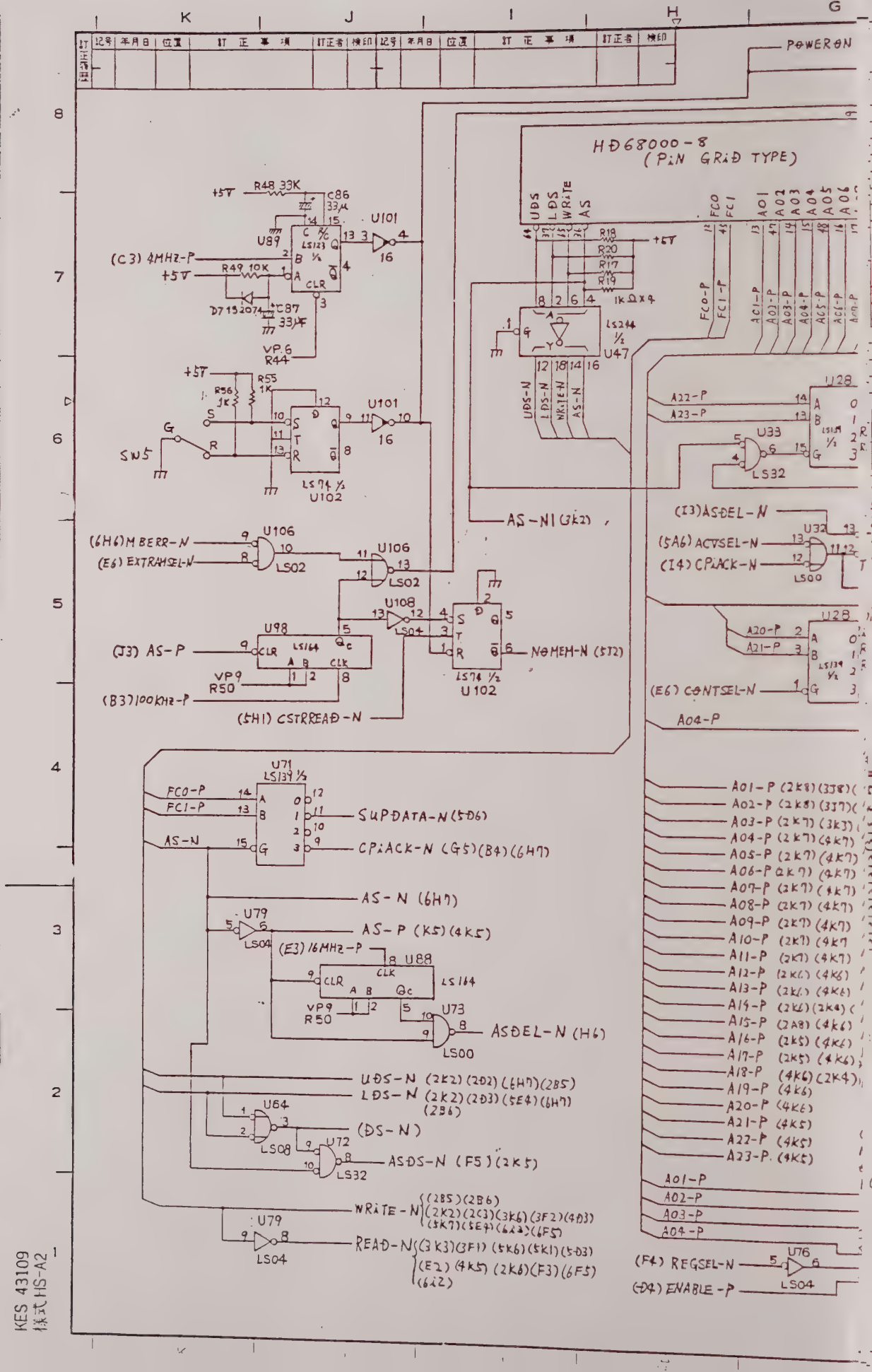
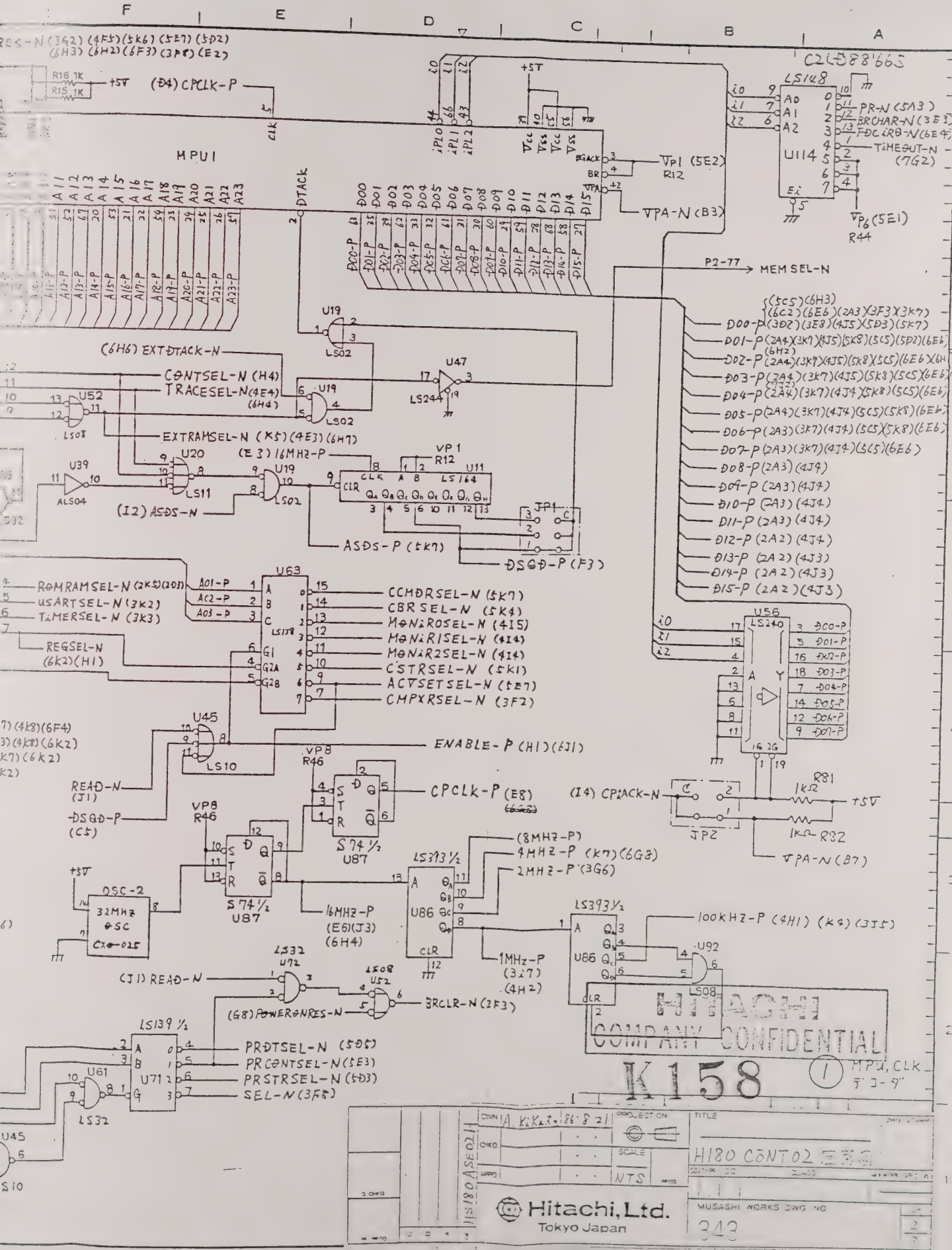

K
J
I
H
G
8
7
6
5
4
3
2
1
訂正
記号
年月日
位置
訂正事項
訂正者
検印
POWERON
HD68000-8
(PIN GRID TYPE)
UDS
LDS
WRITE
AS
FC0
FC1
A01
A02
A03
A04
A05
A06
R48 33K
C86 33μ
U89
U101
(C3) 4MHz-P
R49 10K
D7152074
C87 33μF
VP6
R44
R55 1K
R56 1K
SW5
U102
R18
R20
R17
R19
1kΩx4
LS244
U47
FC0-P
FC1-P
A01-P
A02-P
A03-P
A04-P
A05-P
A06-P
UDS-N
LDS-N
WRITE-N
AS-N
U28
A22-P
A23-P
U33
LS32
(I3) ASDEL-N
(5A6) ACVSEL-N
(I4) CPIACK-N
LS00
(6H6) MBERR-N
(E6) EXTRAMSEL-N
U106
LS02
U108
LS04
U98
LS164
(J3) AS-P
VP9
R50
(B3) 100kHz-P
(5H1) CSTRREAD-N
NOMEM-N (5J2)
A20-P
A21-P
(E6) CONTSEL-N
A04-P
U71
LS139
FC0-P
FC1-P
AS-N
SUPDATA-N (5D6)
CPIACK-N (G5)(B4)(6H7)
AS-N (6H7)
U79
AS-P (K5)(4K5)
(E3) 16MHz-P
U88
U73
ASDEL-N (H6)
UDS-N (2K2)(2D2)(6H7)(2B5)
LDS-N (2K2)(2D3)(5E4)(6H7)
(2B6)
U64
LS08
(DS-N)
U72
LS32
ASDS-N (F5)(2K5)
WRITE-N (2B5)(2B6)
(2K2)(2C3)(3K6)(3F2)(4D3)
(5K7)(5E4)(6A3)(6F5)
READ-N (3K3)(3F1)(5K6)(5K1)(5D3)
(E2)(4K5)(2K6)(F3)(6F5)
(6A2)
A01-P (2K8)(3J8)
A02-P (2K8)(3J7)
A03-P (2K7)(3K3)
A04-P (2K7)(4K7)
A05-P (2K7)(4K7)
A06-P (2K7)(4K7)
A07-P (2K7)(4K7)
A08-P (2K7)(4K7)
A09-P (2K7)(4K7)
A10-P (2K7)(4K7)
A11-P (2K7)(4K7)
A12-P (2K6)(4K6)
A13-P (2K6)(4K6)
A14-P (2K6)(2K4)
A15-P (2A8)(4K6)
A16-P (2K5)(4K6)
A17-P (2K5)(4K6)
A18-P (4K6)(2K4)
A19-P (4K6)
A20-P (4K6)
A21-P (4K5)
A22-P (4K5)
A23-P (4K5)
A01-P
A02-P
A03-P
A04-P
(F4) REGSEL-N
(D4) ENABLE-P
U76
LS04
KES 43109
様式HS-A2


MPU1
U114
LS148
U19
LS02
U47
LS244
U52
LS08
U20
LS11
U39
ALS04
U11
LS164
VP1
R12
JP1
U63
LS139
U56
LS240
U45
LS10
VP8
R46
S74½
U87
OSC-2
32MHz
OSC
U86
LS393½
U92
LS08
U72
LS32
U71
LS139½
U61
LS32
P2-77 → MEM SEL-N
(6H6) EXTDTACK-N
CONTSEL-N (H4)
TRACESEL-N (4E4) (6H4)
EXTRAMSEL-N (K5) (4E3) (6H7)
(E3) 16MHZ-P
(I2) ASDS-N
ASDS-P (5K7)
DSDD-P (F3)
ROMRAMSEL-N (2K5) (3D1)
USARTSEL-N (3K2)
TIMERSEL-N (3K3)
REGSEL-N (6K2) (H1)
ENABLE-P (H1) (4J1)
READ-N (J1)
DSDD-P (C5)
CPCLK-P (E8)
(I4) CPIACK-N
(8MHZ-P)
4MHZ-P (K7) (6G8)
2MHZ-P (3G6)
16MHZ-P (E6) (J3) (6H4)
1MHZ-P (3J7) (4H2)
100KHZ-P (4H1) (K8) (3J5)
(J1) READ-N
(G8) POWERONRES-N
BRCLR-N (3F3)
PRDTSEL-N (5D5)
PRCONTSEL-N (5E3)
PRSTRSEL-N (5D3)
SEL-N (3F8)
VPA-N (B3)
VPA-N (B7)
VP1 (5E2) R12
VP6 (5E1) R44
PR-N (5A3)
BRCHAR-N (3E3)
FDCIRB-N (6E4)
TIMEOUT-N (7G2)
R81 1kΩ
R82 1kΩ
JP2
+5V
C2E888665
HITACHI COMPANY CONFIDENTIAL
K158
MPU, CLK
HI80 CONTO2
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG NO
343

訂正	記号	年月日	位置	訂 正 事 項	訂正者	検印	記号	年月日	位置	訂 正 事 項	訂正者	検印

P3 CONNECTOR

(CRT ヨウ)

FG	1	(3A8)
TXD CRT	2	(3A4)
RXD CRT	3	(3A5)
RTS CRT	4	(3A4)
CTS CRT	5	(3A5)
DSR CRT	6	(3A4)
SG	7	(3A4)
DCD CRT	8	(3A5)
	9	
	10	
(RXD TTL)	11	
(TXD TTL)	12	
(CTS TTL)	13	
(RTS TTL)	14	
(DSR TTL)	15	
(DTR TTL)	16	
	17	
	18	
	19	
DTR CRT	20	(3A3)
	21	
	22	
	23	
	24	
	25	

P4 CONNECTOR

(HOST ヨウ)

FG	1	(3A8)
RXD HOST	2	(3A7)
TXD HOST	3	(3A6)
CTS HOST	4	(3A7)
RTS HOST	5	(3A6)
DTR HOST	6	(3A6)
SG	7	(3A6)
DCD HOST	8	(3A7)
	9	
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
DSR HOST	20	(3A7)
	21	
	22	
	23	
	24	
	25	

P5 CONNECTOR

STROBE-N	1	(5A3)	(5A6)	20	GND
PD0-P	2	(5A6)	(5A6)	21	GND
PD1-P	3	(5A5)	(5A6)	22	GND
PD2-P	4	(5A5)	(5A6)	23	GND
PD3-P	5	(5A5)	(5A6)	24	GND
PD4-P	6	(5A5)	(5A6)	25	GND
PD5-P	7	(5A5)	(5A6)	26	GND
PD6-P	8	(5A5)	(5A6)	27	GND
PD7-P	9	(5A5)	(5A6)	28	GND
PRACK-N	10	(5A4)	(5A6)	29	GND
PBSY-P	11	(5A4)	(5A6)	30	GND
PEMPTY-P	12	(5A4)	(5A6)	31	GND
SELECT-P	13	(5A4)	(5A6)	32	0V
PRIME-N	14	(5A2)	(5A6)	33	GND
FAULT-N	15	(5A4)	(5A6)	34	0V
	16			35	
	17			36	
	18			37	
	19				

P6 CONNECTOR

GND	1	(6A8)	(6A6)	19	DIRECTION-N
HEADLOAD-N	2	(6A3)	(6A8)	19	GND
GND	3	(6A8)	(6A6)	20	STEP-N
INUSE-N	4	(6A7)	(6A8)	21	GND
GND	5	(6A8)	(6A5)	22	WRITEDATA-N
UNIT3SEL-N	6	(6A6)	(6A8)	23	GND
GND	7	(6A8)	(6A5)	24	WRITEGATE-N
INDEX-N	8	(6A7)	(6A8)	25	GND
GND	9	(6A8)	(6A7)	26	TRK0-N
UNIT0SEL-N	10	(6A4)	(6A8)	27	GND
GND	11	(6A8)	(6A7)	28	WPRT-N
UNIT1SEL-N	12	(6A4)	(6A5)	29	GND
GND	13	(6A8)	(6A6)	30	READDATA-N
UNIT2SEL-N	14	(6A6)	(6A8)	31	GND
GND	15	(6A8)	(6A5)	32	SIDESEL-N
MOTORON-N	16	(6A3)	(6A8)	33	GND
GND	17	(6A8)	(6A6)	34	READY-N

KES 43109
様式HS-A2

C2LD 88665

P1 CONNECTOR

1	(5G3)	71	GND (5G2)
2	(5G3)	72	GND (5G2)
3	(5G2)	73	SECRESET-N
4	(5G2)	74	SYSRESET-N (6J3)
5	(4B5)	75	SYSPAUSE-N
6	(4B5)	76	SYSPACK-N
7	(4B5)	77	SECIEN-N
8	(4B5)	78	ACFAIL-N
9	(4B5)	79	TEST-N
10	(4B5)	80	SYSFAIL-N
11	(4B5)	81	BERR-N (6J6)
12	(4B5)	82	RETRY-N
13	(4B4)	83	FC0-N (4J2)
14	(4B4)	84	FC1-N
15	(4B4)	85	FC2-N
16	(4B4)	86	FC3-N
17	(4B4)	87	IRQ1-N
18	(4B4)	88	IRQ2-N
19	(4B4)	89	IRQ3-N
20	(4B4)	90	IRQ4-N
21		91	IRQ5-N
22		92	IRQ6-N
23		93	IRQ7-N
24	(5G2)	94	IACK-N (6J7)
25	(5G2)	95	IACKIN-N
26	(6J7)	96	IACKOUT-N
27	(6J7)	97	BGOIN-N
28	(5G2)	98	BG0OUT-N
29	(5G2)	99	BG1IN-N
30	(6J6)	100	BG1OUT-N
31	(6J7)	101	BG2IN-N
32	(5G2)	102	BG2OUT-N
33	(5G2)	103	BG3IN-N
34		104	BG3OUT-N
35	(4I5)	105	BG4IN-N
36		106	BG4OUT-N
37	(4B8)	107	BR0-N
38	(4B8)	108	BR1-N
39	(4B8)	109	BR2-N
40	(4B8)	110	BR3-N
41	(4B7)	111	BR4-N
42	(4B7)	112	BBSY-N
43	(4B7)	113	BCLR-N
44	(4B7)	114	BREL-N
45	(4B7)	115	(RESERVED)
46	(4B7)	116	(RESERVED)
47	(4B7)	117	(RESERVED)
48	(4B7)	118	(RESERVED)
49	(4B7)	119	GND (5G2)
50	(4B7)	120	GND (5G2)
51	(4B6)	121	-12V
52	(4B6)	122	-12V
53	(4B6)	123	GND (5G2)
54	(4B6)	124	GND (5G2)
55	(4B6)	125	+12V
56	(4B6)	126	+12V
57	(4B6)	127	+12V
58	(4B6)	128	+12V
59		129	+5V (5G1)
60	(4J3)	130	+5V (5G3)
61	(5G2)	131	+5V (5G3)
62	(5G2)	132	+5V (5G3)
63	(6J7)	133	+5V STDBY
64		134	+5V STDBY
65		135	GND (5G2)
66		136	GND (5G2)
67	(4J2)	137	GND (5G2)
68	(5G2)	138	GND (5G2)
69	(5G2)	139	GND (5G2)
70		140	GND (5G2)
	(6J3)		

P2 CONNECTOR

GND	1	(5G2)	61
GND	2	(5G2)	62
GND	3	(5G2)	63
GND	4	(5G2)	64
GND	5	(5G2)	65
GND	6	(5G2)	66
+5V	7	(5G3)	67 -15V
+5V	8	(5G3)	68 -15V
+5V	9	(5G3)	69 +15V
+5V	10	(5G3)	70 +15V
+12V	11		71
+12V	12		72
GND	13	(5G2)	73
GND	14	(5G2)	74
-12V	15		75
-12V	16		76
	17		77
	18		78 MEMSEL-N (1B7)
	19		79 8BIT-N (2I6)
	20		80 TRIG-N (3H1)
	21		81 ILGBREAK-P (4D6)
	22		82 CMDRESET-N (6J5)
	23		83 I6SEL-N (6J4)
	24		84 ASE-N
	25		85 CBR-N (6J5)
	26		86 START-N (6J4)
	27		87 EMRQ-N (6J4)
	28		88 EMGK-N (6J4)
	29		89 WINDOWUSER-N (4J2)
	30		90 STEPUSER-N (4J2)
	31		91 RUNUSER-N (4J2)
	32		92 BRES-N (4J2)
	33		93 BHALT-N (4J2)
	34		94 BBERR-N (4J2)
	35		95 BBR-N (4J2)
	36		96 NOCLK-N (4J2)
	37		97 BREAKKEY-N (6J5)
	38		98 GND (5G2)
	39		99 GND (5G2)
	40		100 DS2-N
	41		101 DS3-N
	42		102 GND (5G2)
	43		103 GND (5G2)
	44		104 CRESET-N (6J4)
	45		105 UCLKMODE-N (6J5)
	46		106 ACTSET-N (6J4)
	47		107 TRACESEL-N (6J4)
	48		108
	49		109
	50		110 LA12-N (4B3)
	51		111 LA13-N (4B3)
	52		112 LA14-N (4B3)
	53		113 LA15-N (4B3)
	54		114 LA16-N (4B3)
	55		115 LA17-N (4B3)
	56		116 LA18-N (4B2)
	57		117 LA19-N (4B2)
	58		118 LA20-N (4B2)
	59		119 LA21-N (4B2)
	60		120 LA22-N (4B2)
			LA23-N (4B2)

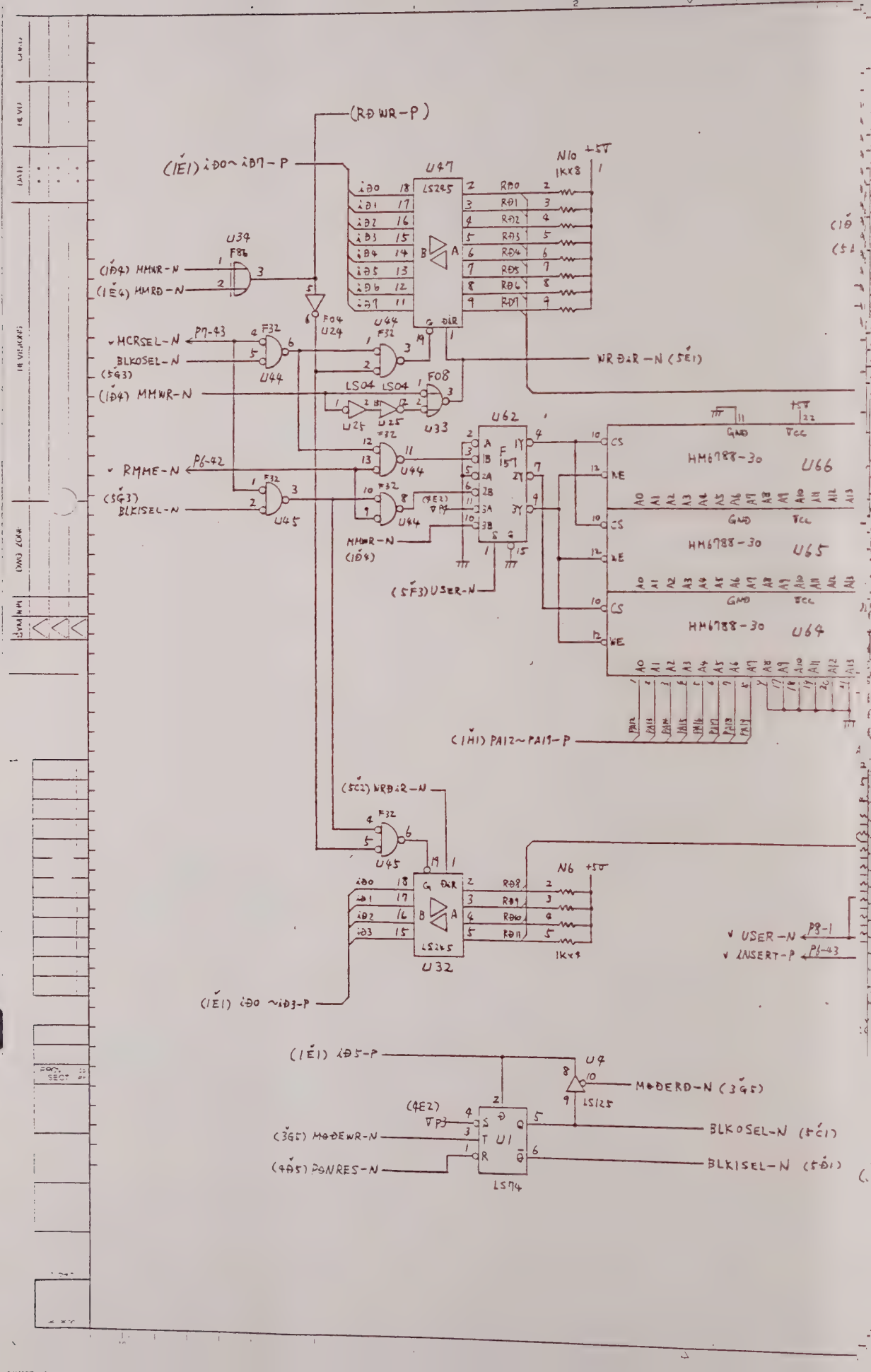
COMPANY CONFIDENTIAL

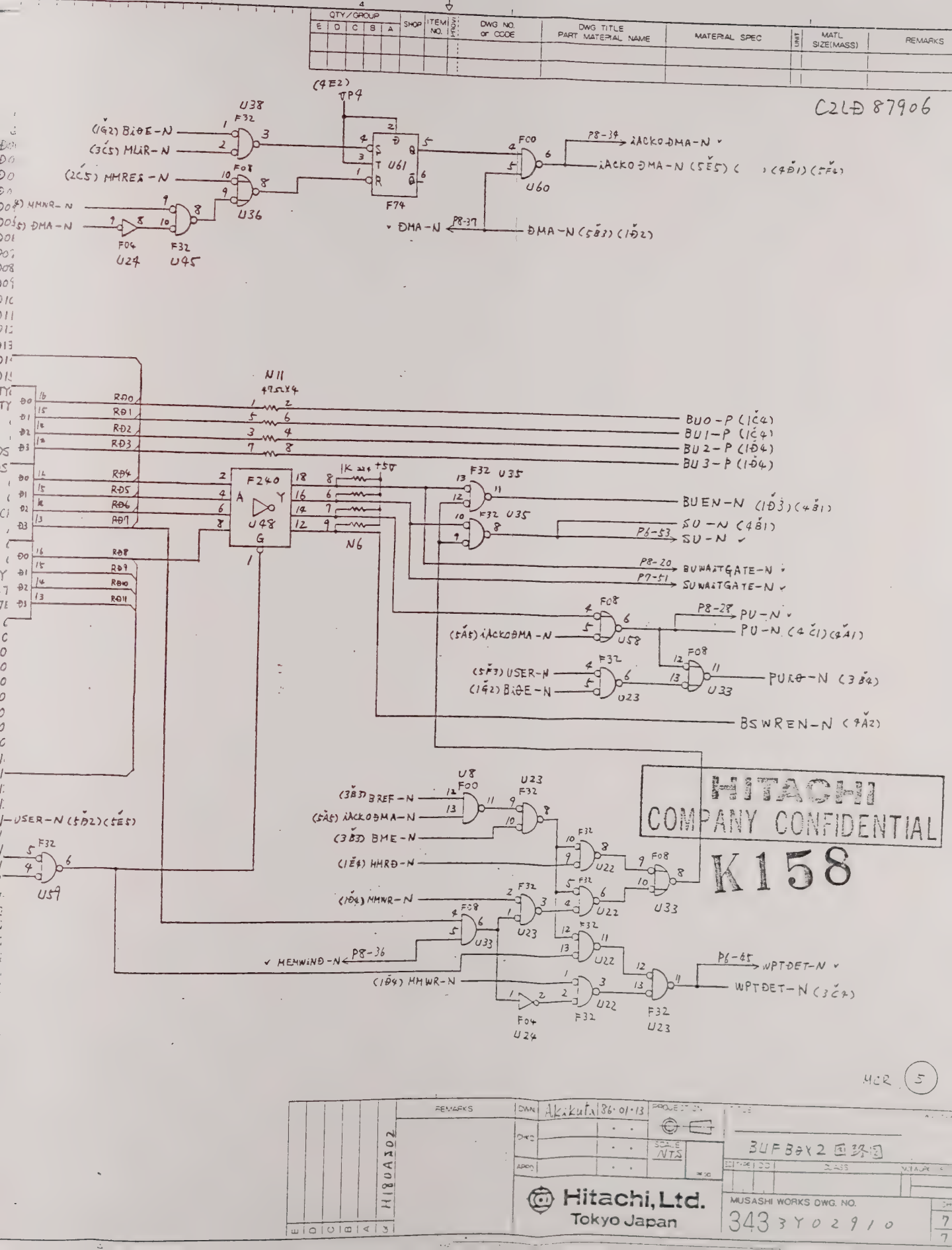
K158

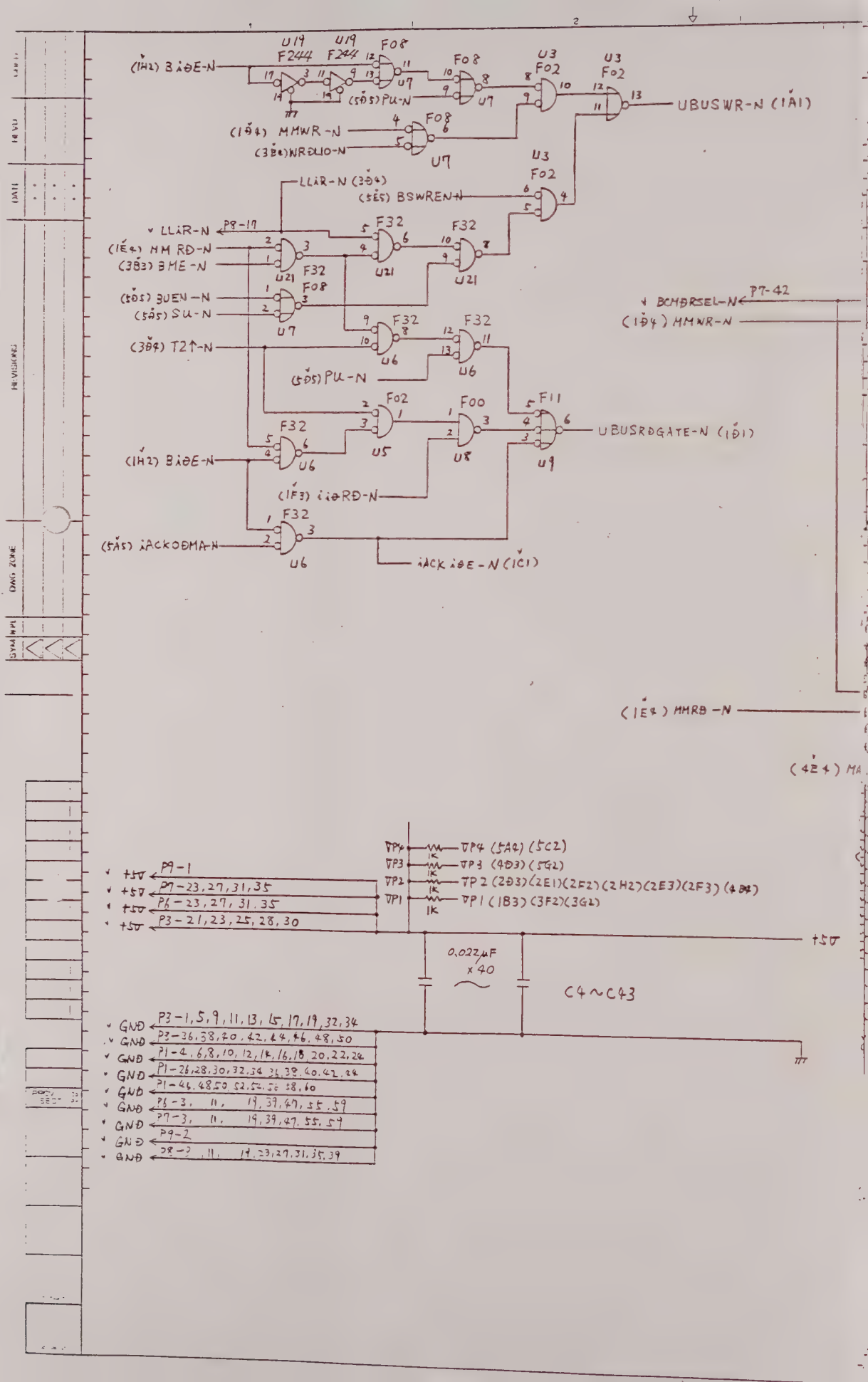
DWN	Y. Kikuta 86-8-21	PROJECTION	TITLE
CHKD		SCALE NTS	H180SMT02 E3B
APPD			

Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG NO
343


(RD WR-P)
(1E1) AD0~AD7-P
U47
LS245
N10
1KX8
U34
F86
(1D4) MMWR-N
(1E4) MMRD-N
F04
U24
U44
F32
MCRSEL-N
P7-43
BLKOSEL-N
(5G3)
(1D4) MMWR-N
LS04
U25
F08
U33
WRDAR-N (5E1)
U62
F157
HM6788-30
U66
U65
U64
RMME-N
P6-42
(5G3)
BLKISEL-N
U45
(5F3) USER-N
(1H1) PA12~PA19-P
(5C2) WRDAR-N
N6
+5V
U32
USER-N
P3-1
INSERT-P
P3-43
(1E1) AD0~AD3-P
(1E1) AD-5-P
U4
LS125
MODERD-N (3G5)
(4E2)
U1
LS74
(3G5) MODEWR-N
(4B5) PONRES-N
BLKOSEL-N (5C1)
BLKISEL-N (5D1)


QTY/GROUP
E D C B A
SHOP
ITEM NO.
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
UNIT
MATL SIZE(MASS)
REMARKS
C2LD 87906
U38
F32
(1G2) BIOE-N
(3C5) MLIR-N
(2C5) MMRES-N
F08
U36
F04
U24
F32
U45
(9E2)
TP4
U61
F74
F00
U60
P8-34
ACKODMA-N
ACKODMA-N (5E5)
(4D1) (5F4)
DMA-N
P8-37
DMA-N (5B3) (1D2)
N11
47Ω×4
RD0
RD1
RD2
RD3
RD4
RD5
RD6
RD7
RD8
RD9
RD10
RD11
F240
U48
1K 2W ±5%
N6
BU0-P (1C4)
BU1-P (1C4)
BU2-P (1D4)
BU3-P (1D4)
F32 U35
BUEN-N (1D3) (4B1)
SU-N (4B1)
P6-53
SU-N
P8-20
BUWAITGATE-N
P7-51
SUWAITGATE-N
F08
P8-28
PU-N
PU-N (4C1) (2A1)
(5A5) IACKODMA-N
(5F3) USER-N
(1G2) BIOE-N
U23
PURD-N (3B4)
U33
BSWREN-N (9A2)
U8
F00
U59
USER-N (5D2) (5E5)
(3B3) BREF-N
(5A5) IACKODMA-N
(3B3) BME-N
(1E5) HMRD-N
(1D4) MMWR-N
U22
MEMWIND-N
P8-36
(1D4) MMWR-N
P6-65
WPTDET-N
WPTDET-N (3C7)
F04
U24
F32
U23
HITACHI
COMPANY CONFIDENTIAL
K158
MCR
5
REMARKS
DWN
Akikuta
86·01·13
CHK
APPD
SCALE NTS
BUF BOX 2 回路図
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG. NO.
343 3Y0 2910
7
7


U19 F244
U19 F244
F08
U7
U3 F02
UBUSWR-N (1A1)
(1H2) BAθE-N
(5D5) PU-N
(1D4) MMWR-N
(3B4) NRθLIO-N
LLAR-N (3D4)
(5E5) BSWREN-N
LLAR-N P8-17
(1E4) MM RD-N
(3B3) BME-N
F32
U21
(5D5) BUEN-N
(5A5) SU-N
(3B4) T2↑-N
U6
F00
F11
U5
U8
U9
UBUSRθGATE-N (1D1)
(1F3) AIθRD-N
(5A5) AACKOθMA-N
AACK AθE-N (1C1)
BCMθRSEL-N P7-42
(1E4) MMRB-N
(4E4) MA
VP4 (5A2) (5C2)
VP3 (4D3) (5G2)
VP2 (2D3)(2E1)(2F2)(2H2)(2E3)(2F3) (4B4)
VP1 (1B3) (3F2)(3G2)
1K
+5V
P9-1
P7-23,27,31,35
P6-23,27,31,35
P3-21,23,25,28,30
0.022μF
×40
C4~C43
GND
P3-1,5,9,11,13,15,17,19,32,34
P3-36,38,40,42,44,46,48,50
P1-4,6,8,10,12,14,16,18,20,22,24
P1-26,28,30,32,34,36,38,40,42,44
P1-46,48,50,52,54,56,58,60
P6-3, 11, 19,39,47,55,59
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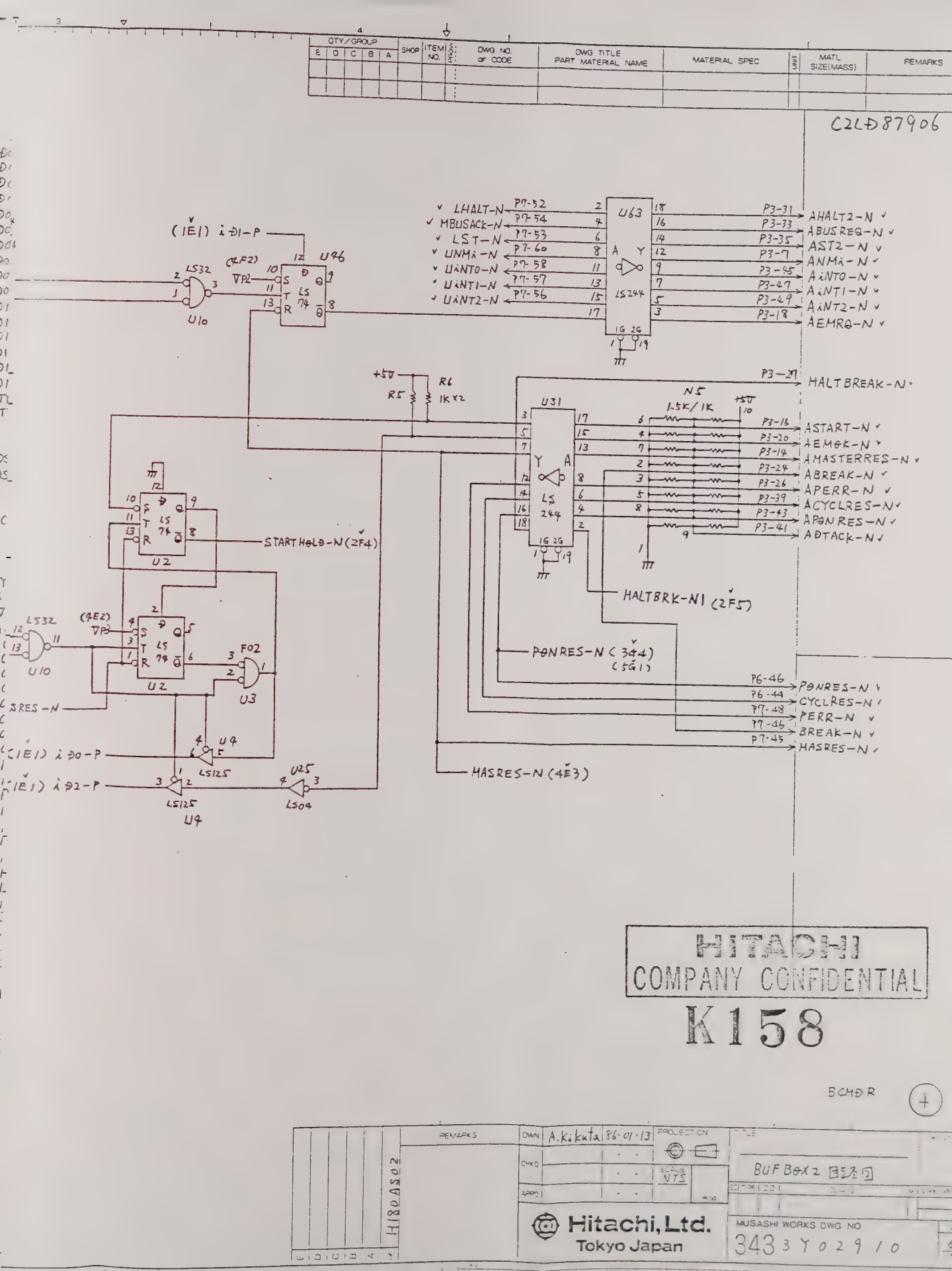
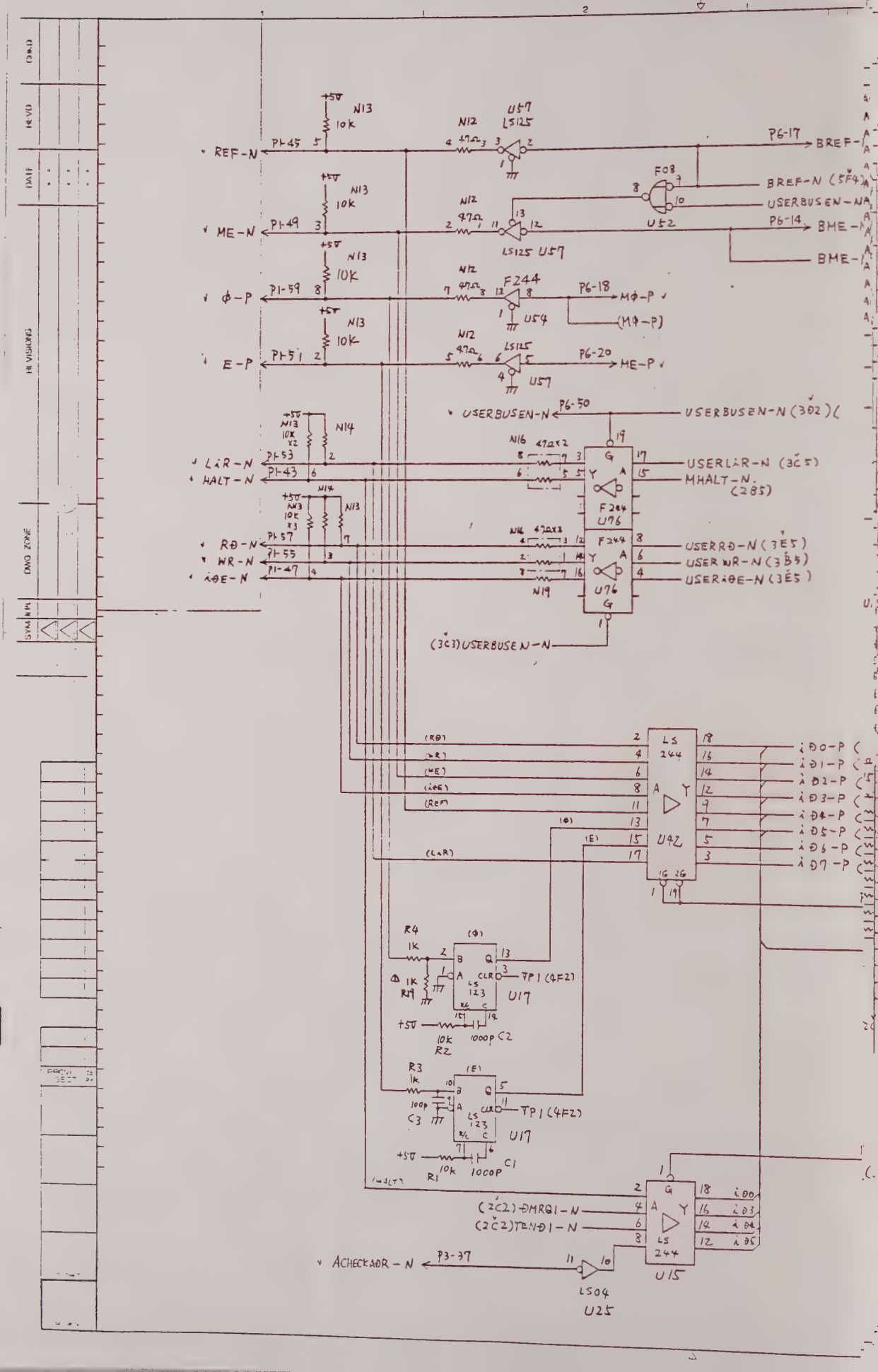
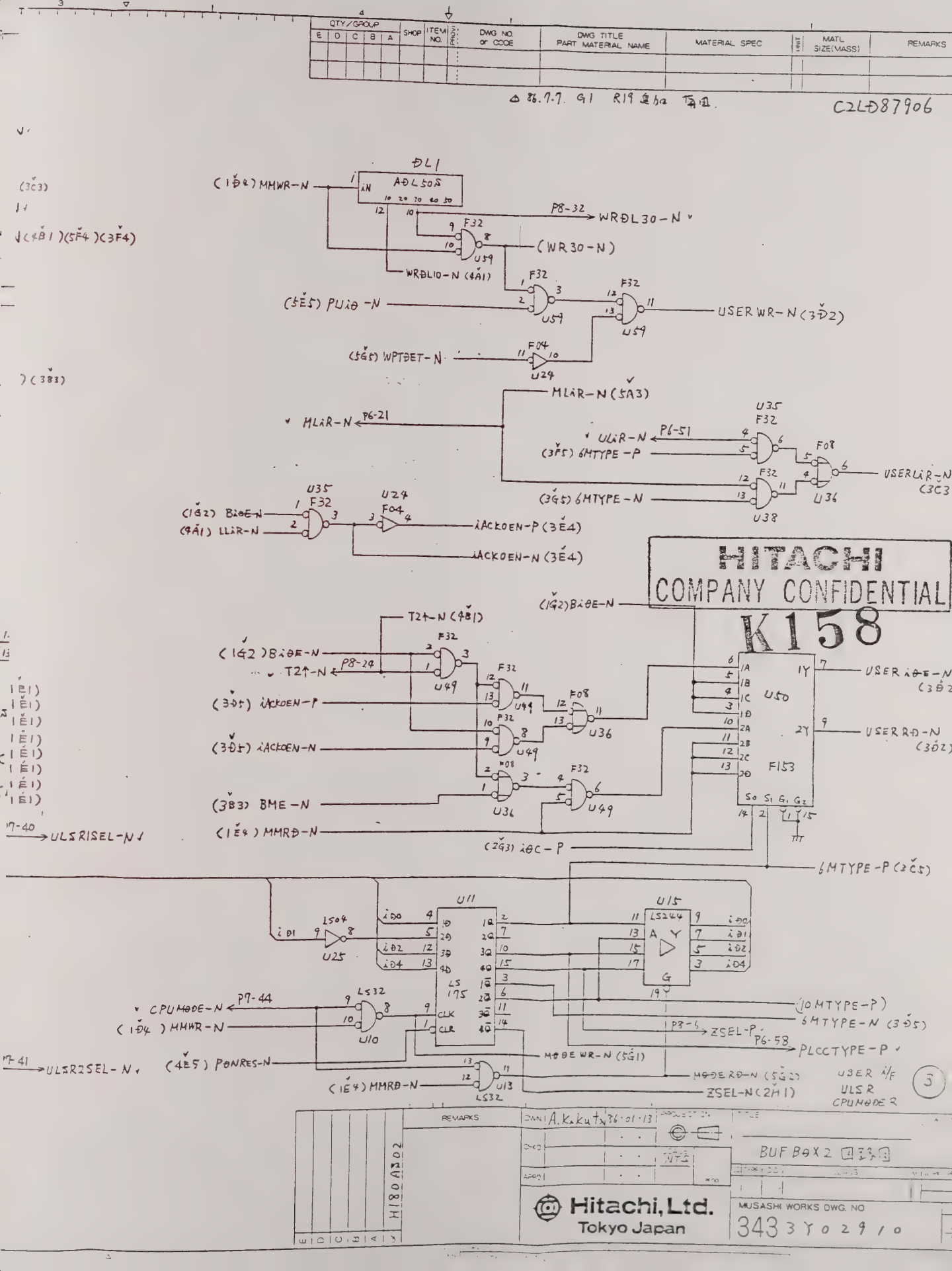
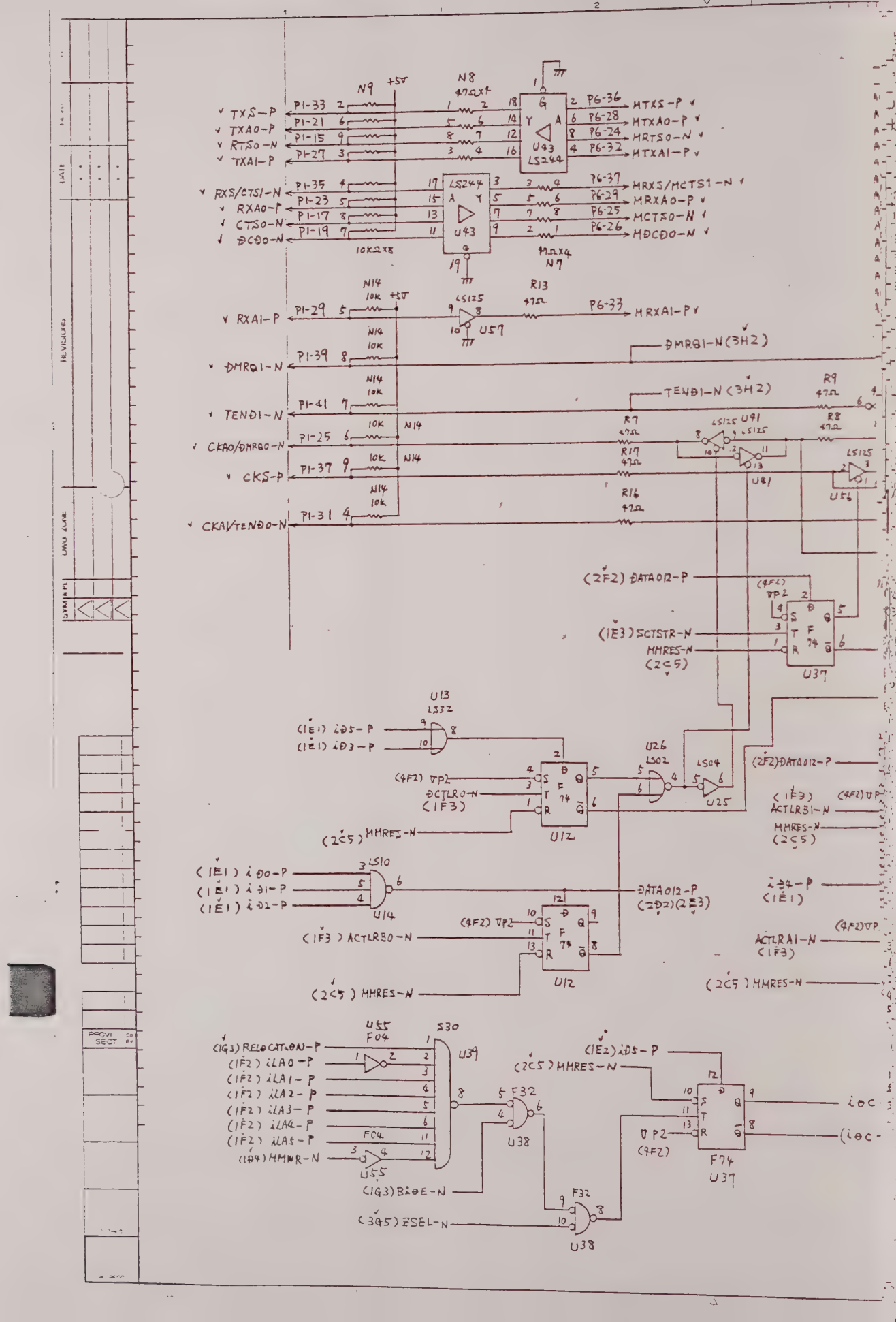
P8-3, 11, 19,23,27,31,35,39


QTY/GROUP
E D C B A
SHOP
ITEM NO.
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
UNIT
MATL SIZE(MASS)
REMARKS
C2LD87906
U63
LS244
LHALT-N
MBUSACK-N
LST-N
UNMI-N
UINTO-N
UINTI-N
UINT2-N
P7-52
P7-54
P7-53
P7-60
P7-58
P7-57
P7-56
P3-31
P3-33
P3-35
P3-7
P3-45
P3-47
P3-49
P3-18
AHALT2-N
ABUSREQ-N
AST2-N
ANMI-N
AINTO-N
AINTI-N
AINT2-N
AEMRQ-N
U46
LS74
LS32
U10
(4F2)
VP2
(IE1) I D1-P
P3-21
HALTBREAK-N
+5V
R5
R6
1KX2
N5
1.5K/1K
U31
LS244
P3-16
P3-20
P3-14
P3-24
P3-26
P3-39
P3-43
P3-41
ASTART-N
AEMGK-N
AMASTERRES-N
ABREAK-N
APERR-N
ACYCLRES-N
APONRES-N
ADTACK-N
U2
START HOLD-N (2F4)
HALTBRK-N1 (2F5)
PONRES-N (3F4)
(5G1)
(4E2)
F02
U3
P6-46
P6-44
P7-48
P7-46
P7-45
PONRES-N
CYCLRES-N
PERR-N
BREAK-N
MASRES-N
ZRES-N
(IE1) I D0-P
U4
LS125
U25
LS04
(IE1) I D2-P
HASRES-N (4E3)
HITACHI
COMPANY CONFIDENTIAL
K158
SCHDR
4
REMARKS
DWN A.Kikuta 86-01-13
CHKD
APPD
PROJECT CN
SCALE NTS
TITLE
BUF BOX 2 基本図
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG NO
3433Y029 10
H180AS02


REF-N
ME-N
Φ-P
E-P
LdR-N
HALT-N
RD-N
WR-N
idE-N
USERBUSEN-N
ACHECKADR-N
BREF-
BME-
MΦ-P
ME-P
USERLdR-N (3C5)
MHALT-N. (285)
USERRD-N (3E5)
USERWR-N (3B5)
USERidE-N (3E5)
(3C3)USERBUSEN-N
idD0-P
idD1-P
idD2-P
idD3-P
idD4-P
idD5-P
idD6-P
idD7-P
TP1 (4F2)
U17
U42
U15
U25
U57
U52
U54
U76
F244
LS244
LS125
LS123
LS04
F08
N12
N13
N14
N16
N19
R1
R2
R3
R4
C1
C2
C3


QTY/GROUP
E D C B A
SHOP
ITEM NO.
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
UNIT
MATL SIZE(MASS)
REMARKS
C2LD87906
DL1
(1D2) MHWR-N
P8-32
WRDL30-N
(WR30-N)
WRDL10-N (4A1)
(5E5) PUID -N
USER WR-N (3D2)
(5G5) WPTDET-N
MLAR-N (5A3)
MLAR-N
P6-21
ULAR-N
P6-51
(3F5) BMTYPE-P
(3G5) BMTYPE-N
USERLAR-N (3C3)
(1G2) BIOE-N
(4A1) LLAR-N
IACKOEN-P (3E4)
IACKOEN-N (3E4)
HITACHI
COMPANY CONFIDENTIAL
K158
T2↑-N (4B1)
P8-29
T2↑-N
(3D5) IACKOEN-P
(3D5) IACKOEN-N
(3B3) BME-N
(1E4) MMRD-N
(2G3) IOC-P
USER IOE-N (3D2)
USER RD-N (3D2)
BMTYPE-P (3C5)
ULSRISEL-N
P7-40
U11
U15
U25
U10
U13
P7-44
CPUMODE-N
(1D4) MHWR-N
P7-41
ULSR2SEL-N
(4E5) PONRES-N
(10MTYPE-P)
BMTYPE-N (3D5)
P8-6
ZSEL-P
P6-58
PLCCTYPE-P
MODE WR-N (5G1)
MODE RD-N (5G2)
ZSEL-N (2H1)
(1E4) MMRD-N
USER I/F
ULSR
CPUMODE
3
REMARKS
DWN A.Kakuta 86-01-13
CHKD
APPD
BUF BOX 2
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG. NO
3433Y029/0
H180A302


TXS-P
TXA0-P
RTS0-N
TXA1-P
RXS/CTSI-N
RXA0-P
CTS0-N
DCD0-N
RXA1-P
DMRQ1-N
TEND1-N
CKA0/DMRQ0-N
CKS-P
CKA1/TEND0-N
MTXS-P
MTXA0-P
MRTS0-N
MTXA1-P
MRXS/MCTS1-N
MRXA0-P
MCTS0-N
MDCD0-N
MRXA1-P
DMRQ1-N(3H2)
TEND1-N(3H2)
(2F2) DATA012-P
(1E3) SCTSTR-N
MMRES-N
(2C5)
(1E1) ID5-P
(1E1) ID3-P
(4F2) TP2
DCTLR0-N
(1F3)
(1E1) ID0-P
(1E1) ID1-P
(1E1) ID2-P
(1F3) ACTLR80-N
(2C5) MMRES-N
DATA012-P
(2D2)(2E3)
(1G3) RELOCATION-P
(1F2) ILA0-P
(1F2) ILA1-P
(1F2) ILA2-P
(1F2) ILA3-P
(1F2) ILA4-P
(1F2) ILA5-P
(1B4) MMWR-N
(1G3) BIOE-N
(3G5) ESEL-N
(1E2) ID5-P
(2C5) MMRES-N
(4F2) TP2
(1E3) ACTLR81-N
MMRES-N
(2C5)
ACTLRA1-N
(1F3)
(2F2) DATA012-P
(1E1)
U13
LS32
U14
LS10
U12
U25
LS04
U26
LS02
U37
F74
U38
F32
U39
S30
U55
F04
U41
LS125
U56
U57
N9
N8
N7
N14
R13
R7
R17
R16
R9
R8
10K
47Ω
10KΩX8
47ΩX4

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

△ 86.06.06. Ð3 ｵﾘｴﾗﾙ不良 #79

C2LD87906

P6-60 → RUNUSER-N

R11 10k +5V

P6-40 ← MÐMRQ1-N

R10 470Ω

LS125 U41

P6-41 ← MTENÐ1-N

LS125 U41

P6-30 ← MCKA0/MÐMRQ0-N

LS125 R15 470Ω

P6-38 ← MCKS-P

U56

LS125 LS125

P6-34 ← MCKA1/MTENÐ0-N

R14 470Ω

U56 U56

LS32

(TRACEÐMRQ0-N)

U13

U51

LS04

LS32

P6-52 ← TRACETENÐ0-N

U13

LS02

U26

U27

U27

MHALT-N (3C3)

MMRES-N (2D2)(2F1)(2F2)(2G1)(2G2)(2G3) (5B3)

U19

MMRES-N P7-50

MHALT-N P6-22

P244

P3-29 ← ARESET-N

P3-8 ← AHALT1-N

P3-10 ← AÐMRQ0-N

P3-12 ← AÐMRQ1-N

STACK-N P7-49

(4D4) STARTHOLD-N

LS 74

HALTBRK-N1 (4D5)

U46

HITACHI
COMPANY CONFIDENTIAL

K158

-P (3F5)

N)

I/O CONTROL (2)

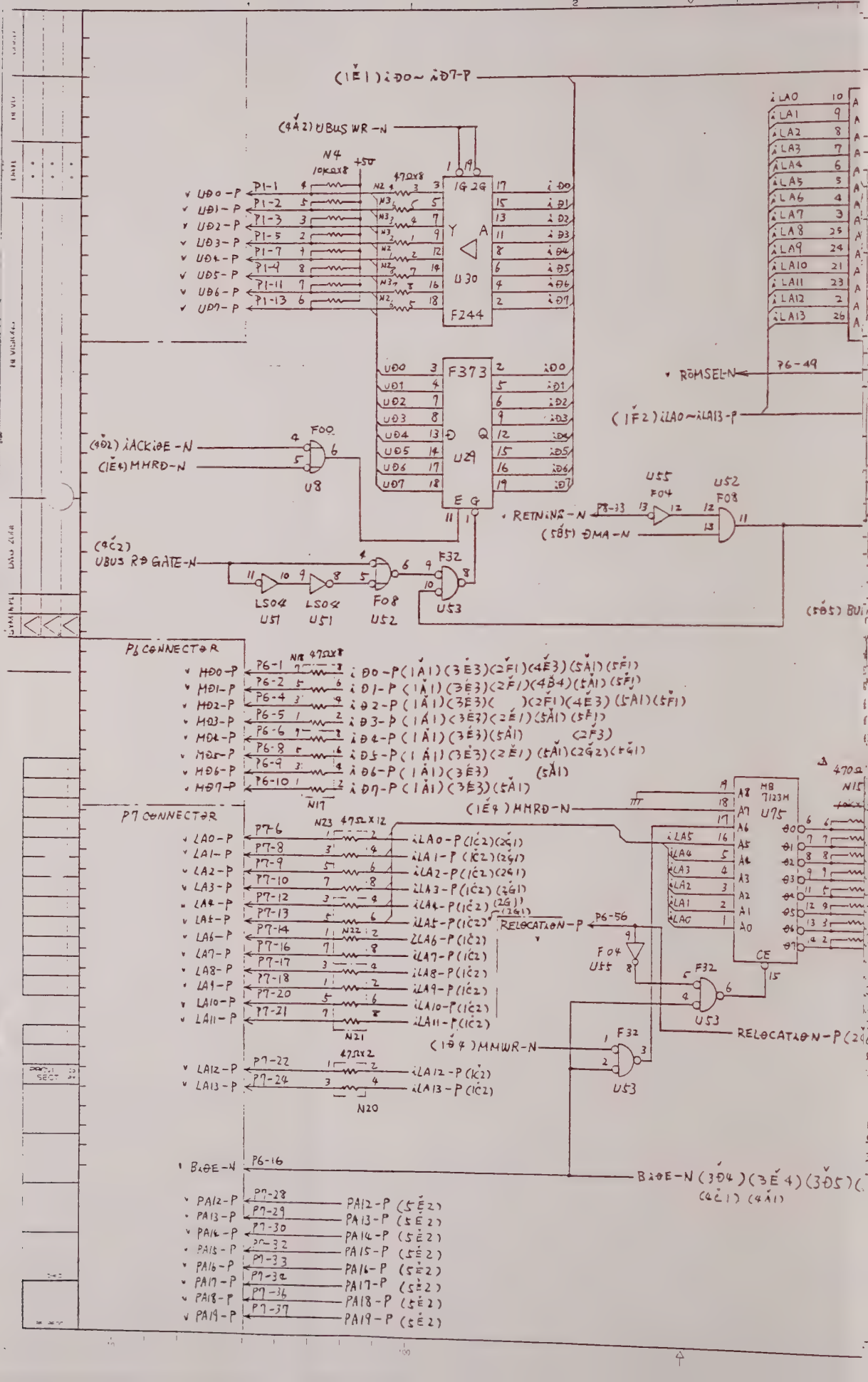
REMARKS	DWN	CHKD	APPD
	A.Kikuta 86-01-13		

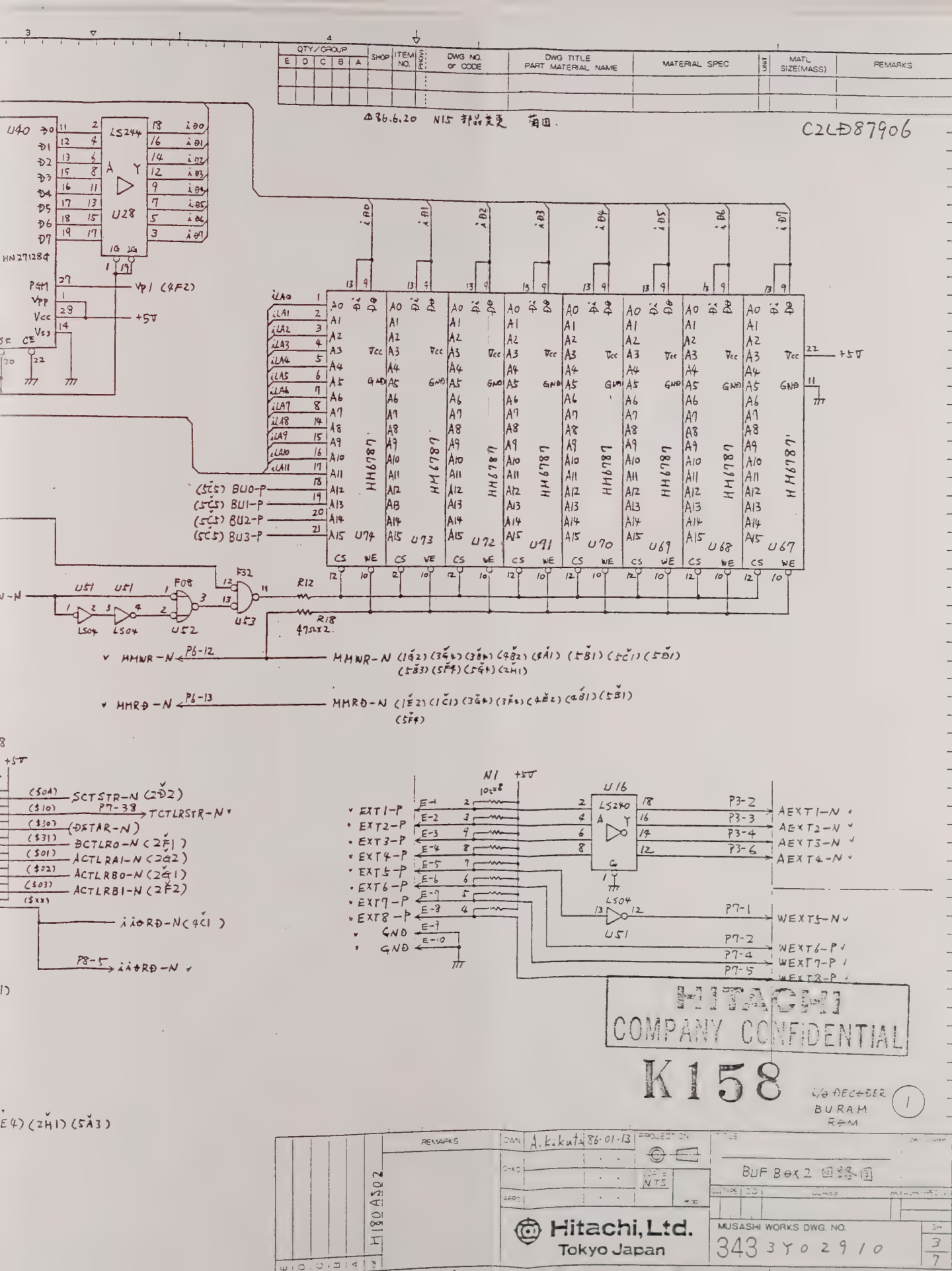
H180AS02

BUFBOX2 回33 1

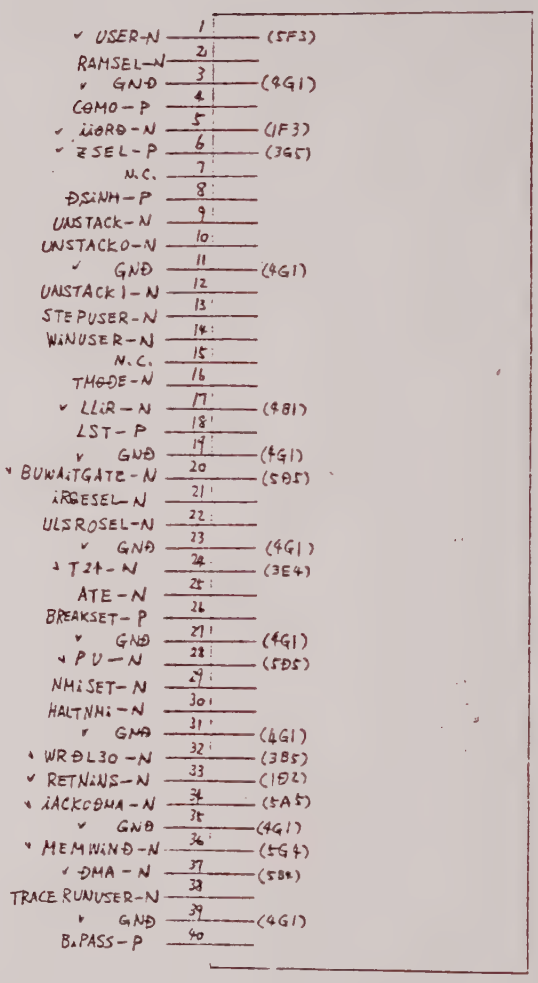
Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG. NO
343 3T029 10


(1E1) iD0~iD7-P
(4A2) UBUS WR-N
N4
10KΩx8
+5V
470Ωx8
UD0-P
UD1-P
UD2-P
UD3-P
UD4-P
UD5-P
UD6-P
UD7-P
P1-1
P1-2
P1-3
P1-5
P1-7
P1-9
P1-11
P1-13
1G 2G
U30
F244
iD0
iD1
iD2
iD3
iD4
iD5
iD6
iD7
F373
U29
UD0
UD1
UD2
UD3
UD4
UD5
UD6
UD7
D Q
E G
iLA0
iLA1
iLA2
iLA3
iLA4
iLA5
iLA6
iLA7
iLA8
iLA9
iLA10
iLA11
iLA12
iLA13
P6-49
ROMSEL-N
(1F2) iLA0~iLA13-P
F00
U8
(4D2) iACKiBE-N
(1E4) MMRD-N
U55
F04
U52
F08
P8-33
RETNING-N
(5B5) DMA-N
(4C2)
UBUS RD GATE-N
LS04
U51
LS04
U51
F08
U52
F32
U53
P6 CONNECTOR
N18 470Ωx8
HD0-P
HD1-P
HD2-P
HD3-P
HD4-P
HD5-P
HD6-P
HD7-P
P6-1
P6-2
P6-4
P6-5
P6-6
P6-8
P6-9
P6-10
N17
P7 CONNECTOR
N23 470Ωx12
LA0-P
LA1-P
LA2-P
LA3-P
LA4-P
LA5-P
LA6-P
LA7-P
LA8-P
LA9-P
LA10-P
LA11-P
P7-6
P7-8
P7-9
P7-10
P7-12
P7-13
P7-14
P7-16
P7-17
P7-18
P7-20
P7-21
N22
N21
LA12-P
LA13-P
P7-22
P7-24
470Ωx2
N20
(1E4) MMWR-N
RELOCATION-P
P6-56
F04
U55
F32
U53
MB 7123H
U75
CE
470Ω
N11
BAUE-N
P6-16
PA12-P
PA13-P
PA14-P
PA15-P
PA16-P
PA17-P
PA18-P
PA19-P
P7-28
P7-29
P7-30
P7-32
P7-33
P7-34
P7-36
P7-37


QTY/GROUP
E D C B A
SHOP
ITEM NO.
PNO(V)
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
UNIT
MATL SIZE(MASS)
REMARKS
△86.6.20 N15 部品変更 前田.
C2LD87906
U40
LS244
U28
HN27128
HM6787
U74
U73
U72
U71
U70
U69
U68
U67
MMWR-N
MMRD-N
U51
LS04
F08
F32
U52
U53
R12
R18
47Ω×2
SCTSTR-N (2D2)
TCTLRSTR-N
DSTAR-N
BCTLR0-N (2F1)
ACTLRA1-N (2G2)
ACTLRB0-N (2G1)
ACTLRB1-N (2F2)
N1
10KΩ8
U16
LS240
EXT1-P
EXT2-P
EXT3-P
EXT4-P
EXT5-P
EXT6-P
EXT7-P
EXT8-P
GND
AEXT1-N
AEXT2-N
AEXT3-N
AEXT4-N
WEXT5-N
WEXT6-P
WEXT7-P
WEXT8-P
HITACHI
COMPANY CONFIDENTIAL
K158
I/O DECODER
BURAM
RAM
BUF Box 2
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG. NO.
343 3Y0 29 10
A. kikuta 86-01-13
NTS

P8 CONNECTOR



QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	PROVI	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD 87906

HITACHI
COMPANY CONFIDENTIAL

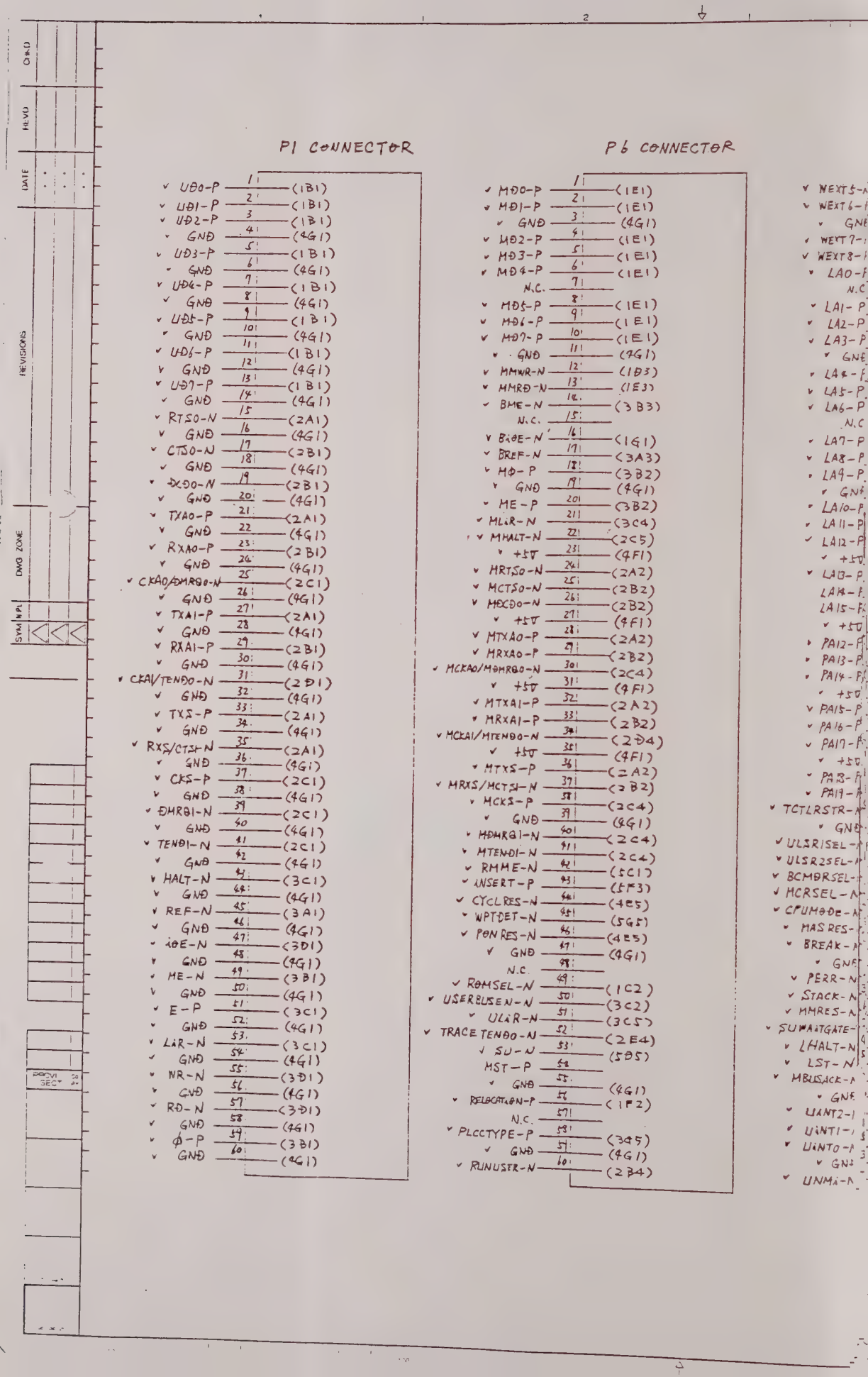
K158

REMARKS	DWN	A.kakuta 87.03.09	PROJECTION
	CHKD		
	APPD		

11180 AS02

Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG NO
343 3Y0 2910


P1 CONNECTOR
P6 CONNECTOR
UB0-P (1B1)
UB1-P (1B1)
UB2-P (1B1)
GND (4G1)
UB3-P (1B1)
GND (4G1)
UB4-P (1B1)
GND (4G1)
UB5-P (1B1)
GND (4G1)
UB6-P (1B1)
GND (4G1)
UB7-P (1B1)
GND (4G1)
RTS0-N (2A1)
GND (4G1)
CTS0-N (2B1)
GND (4G1)
DCD0-N (2B1)
GND (4G1)
TXA0-P (2A1)
GND (4G1)
RXA0-P (2B1)
GND (4G1)
CLKA0/BMRB0-N (2C1)
GND (4G1)
TXA1-P (2A1)
GND (4G1)
RXA1-P (2B1)
GND (4G1)
CLKA1/TENB0-N (2D1)
GND (4G1)
TXS-P (2A1)
GND (4G1)
RXS/CTSI-N (2A1)
GND (4G1)
CKS-P (2C1)
GND (4G1)
BMRB1-N (2C1)
GND (4G1)
TENB1-N (2C1)
GND (4G1)
HALT-N (3C1)
GND (4G1)
REF-N (3A1)
GND (4G1)
IOE-N (3D1)
GND (4G1)
ME-N (3B1)
GND (4G1)
E-P (3C1)
GND (4G1)
LAR-N (3C1)
GND (4G1)
WR-N (3D1)
GND (4G1)
RD-N (3D1)
GND (4G1)
Φ-P (3B1)
GND (4G1)
MD0-P (1E1)
MD1-P (1E1)
GND (4G1)
MD2-P (1E1)
MD3-P (1E1)
MD4-P (1E1)
N.C.
MD5-P (1E1)
MD6-P (1E1)
MD7-P (1E1)
GND (4G1)
MMWR-N (1B3)
MMRD-N (1E3)
BME-N (3B3)
N.C.
BIOE-N (1G1)
BREF-N (3A3)
MΦ-P (3B2)
GND (4G1)
ME-P (3B2)
MLAR-N (3C4)
MHALT-N (2C5)
+5V (4F1)
MRTS0-N (2A2)
MCTS0-N (2B2)
MDCD0-N (2B2)
+5V (4F1)
MTXA0-P (2A2)
MRXA0-P (2B2)
MCKA0/MBMRB0-N (2C4)
+5V (4F1)
MTXA1-P (2A2)
MRXA1-P (2B2)
MCKA1/MTENB0-N (2D4)
+5V (4F1)
MTXS-P (2A2)
MRXS/MCTSI-N (2B2)
MCKS-P (3C4)
GND (4G1)
MBMRB1-N (2C4)
MTENB1-N (2C4)
RMME-N (5C1)
INSERT-P (5F3)
CYCLRES-N (4E5)
WPTDET-N (5G5)
PONRES-N (4E5)
GND (4G1)
N.C.
ROMSEL-N (1C2)
USERELSEN-N (3C2)
ULAR-N (3C5)
TRACE TENB0-N (2E4)
SU-N (5D5)
MST-P
GND (4G1)
RELOCATION-P (1F2)
N.C.
PLCCTYPE-P (3A5)
GND (4G1)
RUNUSER-N (2B4)
NEXT5-N
NEXT6-N
GND
NEXT7-N
NEXT8-N
LA0-P
N.C.
LA1-P
LA2-P
LA3-P
GND
LA4-P
LA5-P
LA6-P
N.C.
LA7-P
LA8-P
LA9-P
GND
LA10-P
LA11-P
LA12-P
+5V
LA13-P
LA14-P
LA15-P
+5V
PA12-P
PA13-P
PA14-P
+5V
PA15-P
PA16-P
PA17-P
+5V
PA18-P
PA19-P
TCTLRSTR-N
GND
ULSR1SEL-N
ULSR2SEL-N
BCMBRSEL-N
MCRSEL-N
CPUMODE-N
MASRES-N
BREAK-N
GND
PERR-N
STACK-N
MMRES-N
SUMMATGATE-N
LHALT-N
LST-N
MBUSACK-N
GND
UINT2-N
UINT1-N
UINT0-N
GND
UNMI-N
REVISIONS
DWG ZONE
SYM NPL
DRAWN
DATE
APPVD
PROVI SECT

QTY/GROUP E	O	C	B	A	SHOP	ITEM NO.	PROJ.	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD87906

P7 CONNECTOR

1		
2	(1F5)	
3	(1F5)	
4	(4G1)	
5	(1F5)	
6	(1F5)	
7	(1F1)	
8		
9	(1F1)	
10	(1F1)	
11	(1F1)	
12	(4G1)	
13	(1F1)	
14	(1F1)	
15	(1F1)	
16		
17	(1F1)	
18	(1F1)	
19	(1F1)	
20	(4G1)	
21	(1F1)	
22	(1F1)	
23	(1G1)	
24	(4F1)	
25	(1G1)	
26		
27		
28	(4F1)	
29	(1H1)	
30	(1H1)	
31	(1H1)	
32	(4F1)	
33	(1H1)	
34	(1H1)	
35	(1H1)	
36	(4F1)	
37	(1H1)	
38	(1H1)	
39	(1F3)	
40	(4G1)	
41	(3F3)	
42	(3G3)	
43	(4B2)	
44	(5B1)	
45	(3G3)	
46	(4E5)	
47	(4E5)	
48	(4G1)	
49	(4E5)	
50	(2F4)	
51	(2C5)	
52	(5D5)	
53	(4B4)	
54	(4B4)	
55	(4B4)	
56	(4G1)	
57	(4B4)	
58	(4B4)	
59	(4B4)	
60	(4G1)	
	(4B4)	

P3 CONNECTOR

GND	1	(4G1)	GND
AEXT1-N	2	(1F5)	AEXT1-N
AEXT2-N	3	(1F5)	AEXT2-N
AEXT3-N	4	(1F5)	AEXT3-N
GND	5	(4G1)	GND
AEXT4-N	6	(1F5)	AEXT4-N
ANMI-N	7	(4B5)	AEXT5-N
AHALTI-N	8	(2C5)	AEXT6-N
GND	9	(4G1)	GND
ADMRQ0-N	10	(2C5)	AEXT7-N
GND	11	(4G1)	GND
ADMRQ1-N	12	(2C5)	AEXT8-N
GND	13	(4G1)	GND
AMASTERRES-N	14	(4C5)	AMASTERRES-N
GND	15	(4G1)	GND
ASTART-N	16	(4C5)	ASTART-N
GND	17	(4G1)	GND
AEMRQ-N	18	(4B5)	AEMRQ-N
GND	19	(4G1)	GND
AEMGK-N	20	(4C5)	AEMGK-N
+5V	21	(4F1)	+5V
N.C.	22		ABREAKSET-N
+5V	23	(4F1)	+5V
ABREAK-N	24	(4C5)	ABREAK-N
+5V	25	(4F1)	+5V
APERR-N	26	(4C4)	APERR-N
HALTBREAK-N	27	(4C5)	N.C.
+5V	28	(4F1)	+5V
ARESET-N	29	(2C5)	ARESET-N
+5V	30	(4F1)	+5V
AHALT2-N	31	(4B5)	AHALT-N
GND	32	(4G1)	GND
ABUSREQ-N	33	(4B5)	ABR-N
GND	34	(4G1)	GND
AST2-N	35	(4B5)	ABERR-N
GND	36	(4G1)	GND
ACHECKADR-N	37	(3H1)	ACHECKADR-N
GND	38	(4G1)	GND
ACYCLRES-N	39	(4C4)	ACYCLRES-N
GND	40	(4G1)	GND
ADTACK-N	41	(4D5)	ADTACK-N
GND	42	(4G1)	GND
APONRES-N	43	(4D5)	PONRES-N
GND	44	(4G1)	GND
AINTO-N	45	(4B5)	AIPLO-N
GND	46	(4G1)	GND
AINTI-N	47	(4B5)	AIPLI-N
GND	48	(4G1)	GND
AINT2-N	49	(4B5)	AIPL2-N
GND	50	(4G1)	GND

E CONNECTOR

EXT1-P	1	(1F4)
EXT2-P	2	(1F4)
EXT3-P	3	(1F4)
EXT4-P	4	(1F4)
EXT5-P	5	(1F4)
EXT6-P	6	(1F4)
EXT7-P	7	(1F4)
EXT8-P	8	(1F4)
GND	9	(1F4)
GND	10	(1F4)

P9 CONNECTOR

+5V	1	(4F1)
GND	2	(4G1)

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K158

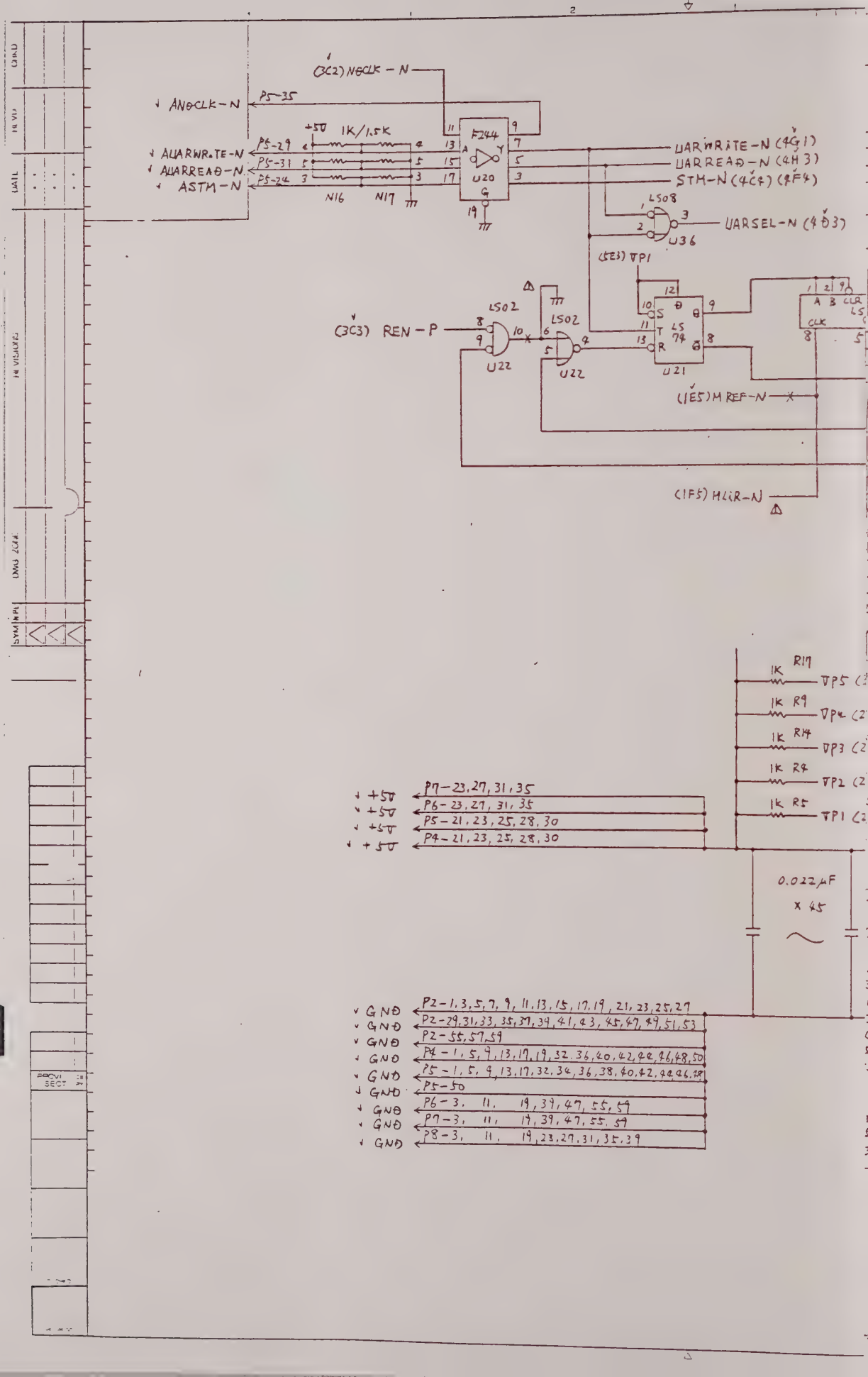
REMARKS	DWN	A.Kakui	86-01-13	PROJECTION	TITLE
	CHKD				BUFBOX2 回路図
	APPD			SCALE NTS	SIZE / DO / CLASS

H180ASD02

Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG NO
343 3Y029/0

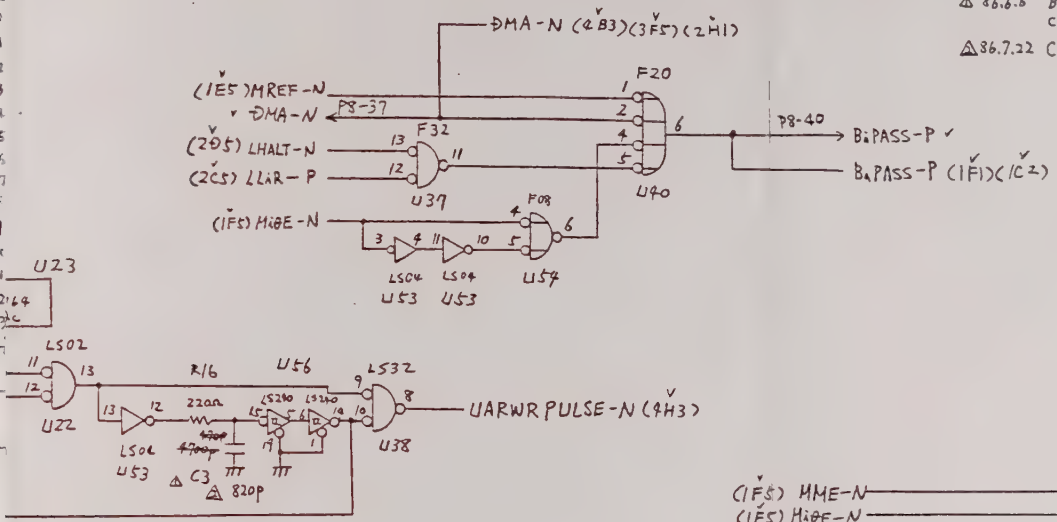
1/7


(3C2) N6CLK - N
ANGCLK - N
P5-35
+5V 1K/1.5K
P5-29
P5-31
P5-24
ALARWRATE-N
ALARREAD-N
ASTM-N
N16
N17
F244
U20
UARWRATE-N (4G1)
UARREAD-N (4H3)
STM-N (4C4) (8F4)
LS08
U36
UARSEL-N (4D3)
(3E3) TP1
(3C3) REN-P
LS02
U22
LS74
U21
(1E5) MREF-N
(1F5) HLIR-N
R19
1K
TP5
R9
TP4
R14
TP3
R4
TP2
R5
TP1
P7-23,27,31,35
P6-23,27,31,35
P5-21,23,25,28,30
P4-21,23,25,28,30
0.022μF
x 45
GND
P2-1,3,5,7,9,11,13,15,17,19,21,23,25,27
P2-29,31,33,35,37,39,41,43,45,47,49,51,53
P2-55,57,59
P4-1,5,9,13,19,19,32,36,40,42,46,48,50
P5-1,5,9,13,17,32,34,36,38,40,42,44,46,48
P5-50
P6-3, 11, 19,39,47,55,59
P7-3, 11, 19,39,47,55,59
P8-3, 11, 19,23,27,31,35,39

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

△ 86.6.6 B2 C3 タイミング不良 ﾀｲﾐﾝｸﾞ不良 C2D87905

△ 86.7.22 C3 定数変更 470p→820p カン



P6, P7 CONNECTOR

(1F5) MME-N	P6-14	BME-N
(1F5) MIBE-N	P6-16	BUBE-N
(1E5) MREF-N	P6-19	BREF-N
(1E5) MWR-N	P6-12	MMWR-N
(1E5) MRD-N	P6-13	MMRD-N
(1D5) MΦ-P	P6-18	MΦ-P
(1F5) MLAR-N	P6-21	MLAR-N
(1F5) MHALT-N	P6-22	MHALT-N
(1D5) MBUSACK-N	P7-54	MBUS ACK-N
(2D4) LHALT-N	P7-52	LHALT-N
(2D5) LST-N	P7-53	LST-N
(1F5) MST-P	P6-54	MST-P

(C4)(4F4)(2C4)

(F1) (3B5)(2D3)

(H1)(2H2)(2B1)(2H2)

(B3)(2B4)(2F3)(2E2)(2F2)(3D1)(3E1)(3D1)

(A2)(3H1)(3G5)(5B2)

+5V

C5~C39

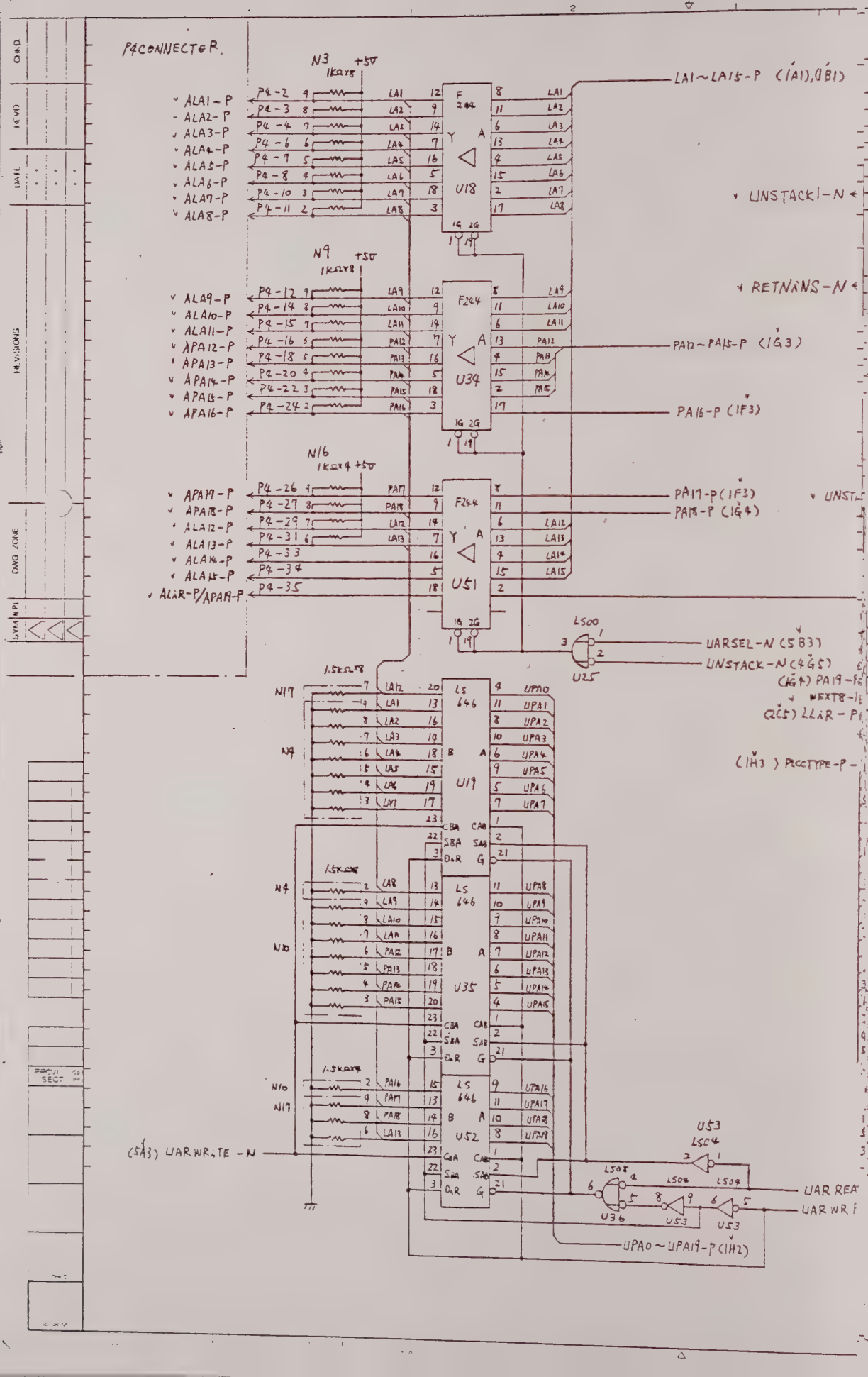
C39~C50

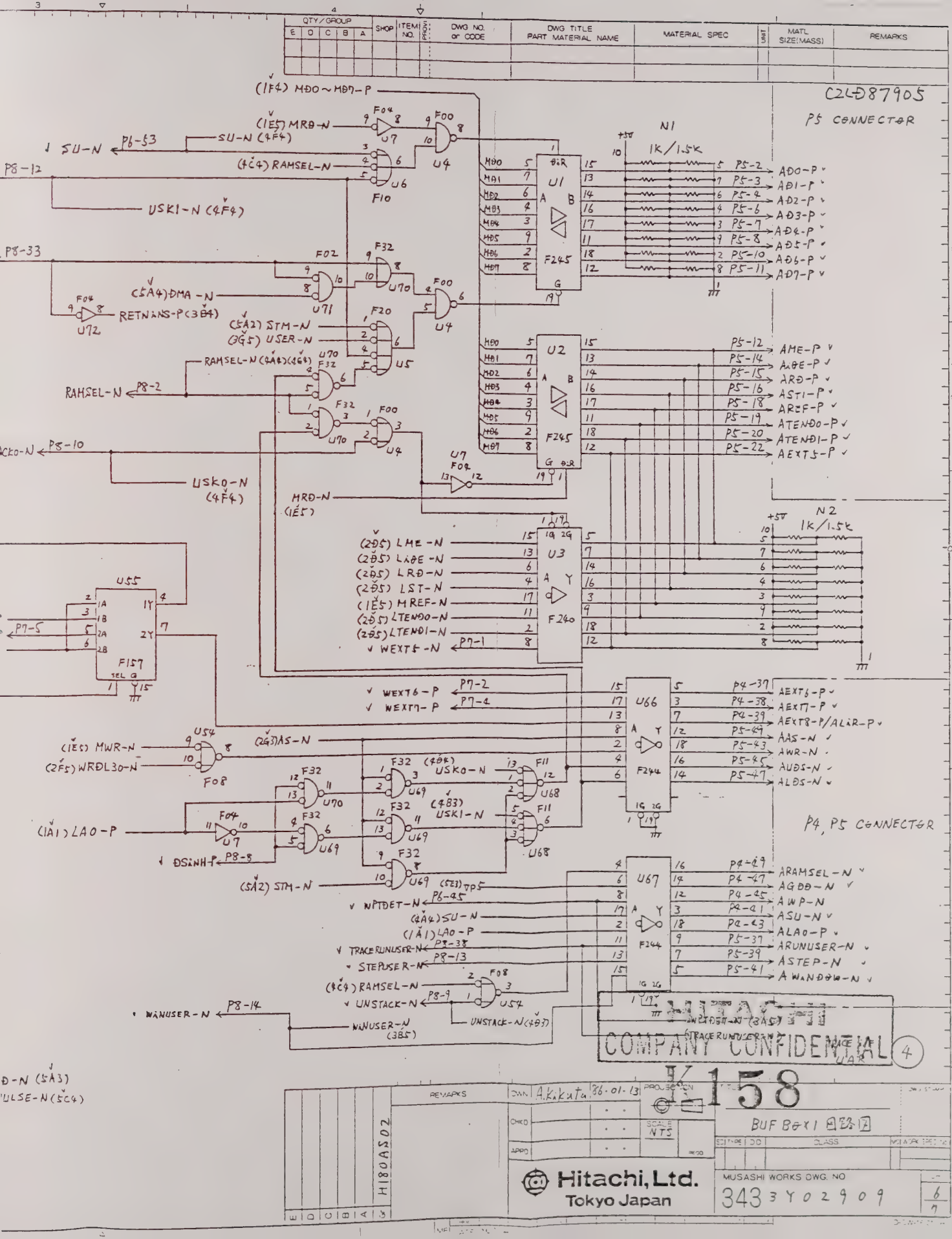
HITACHI
COMPANY CONFIDENTIAL
K158

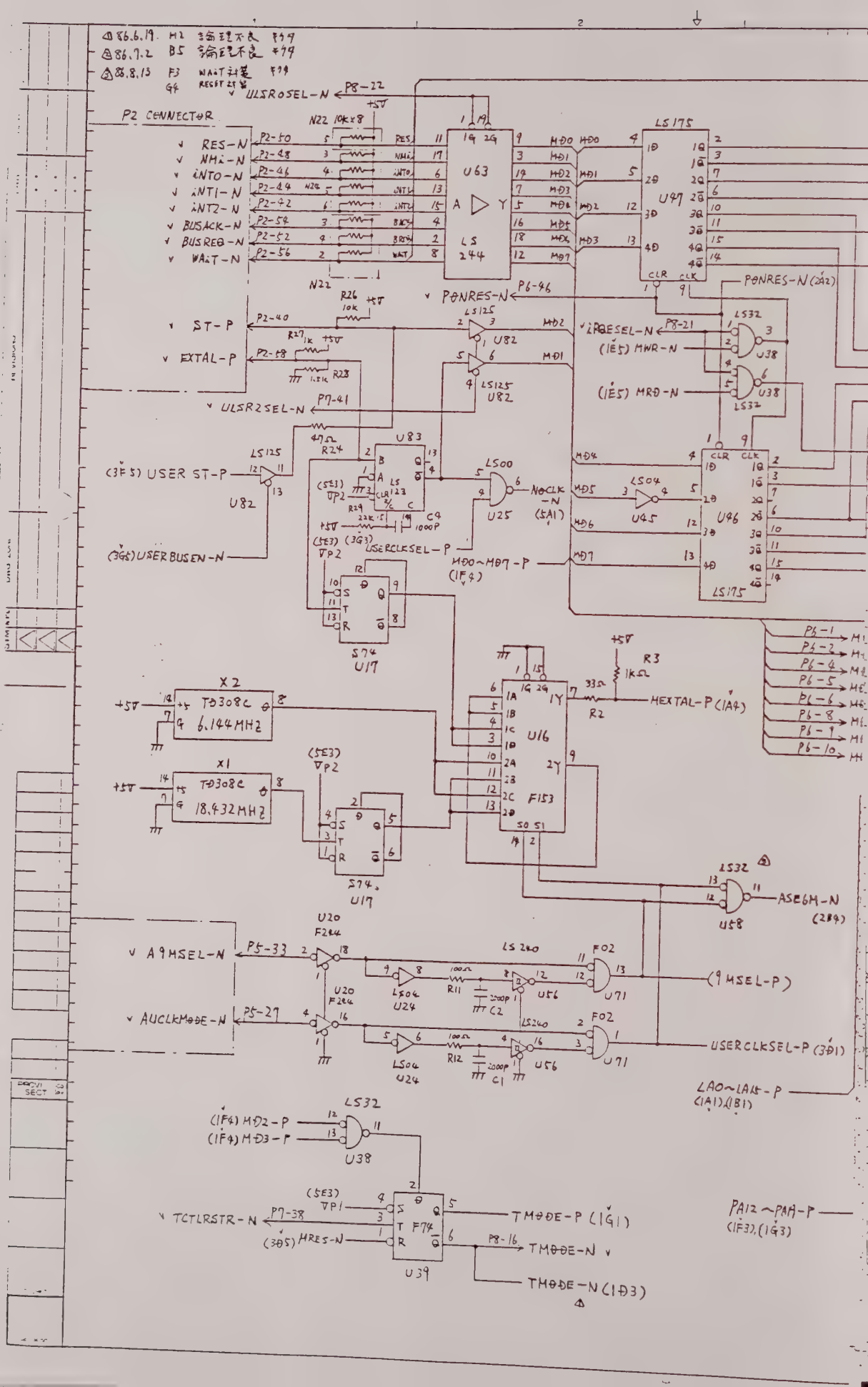
UAR
BUS A/=

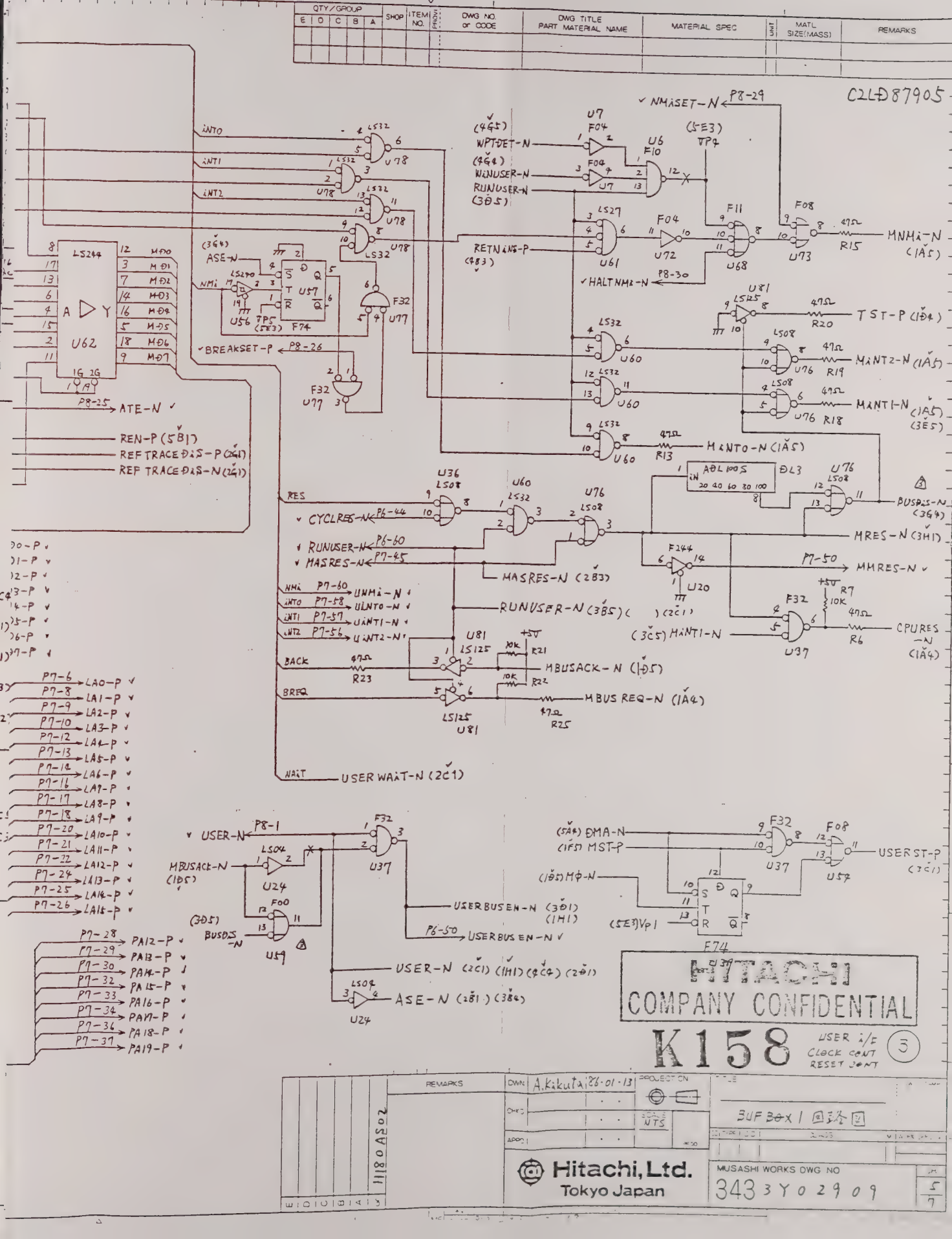
5

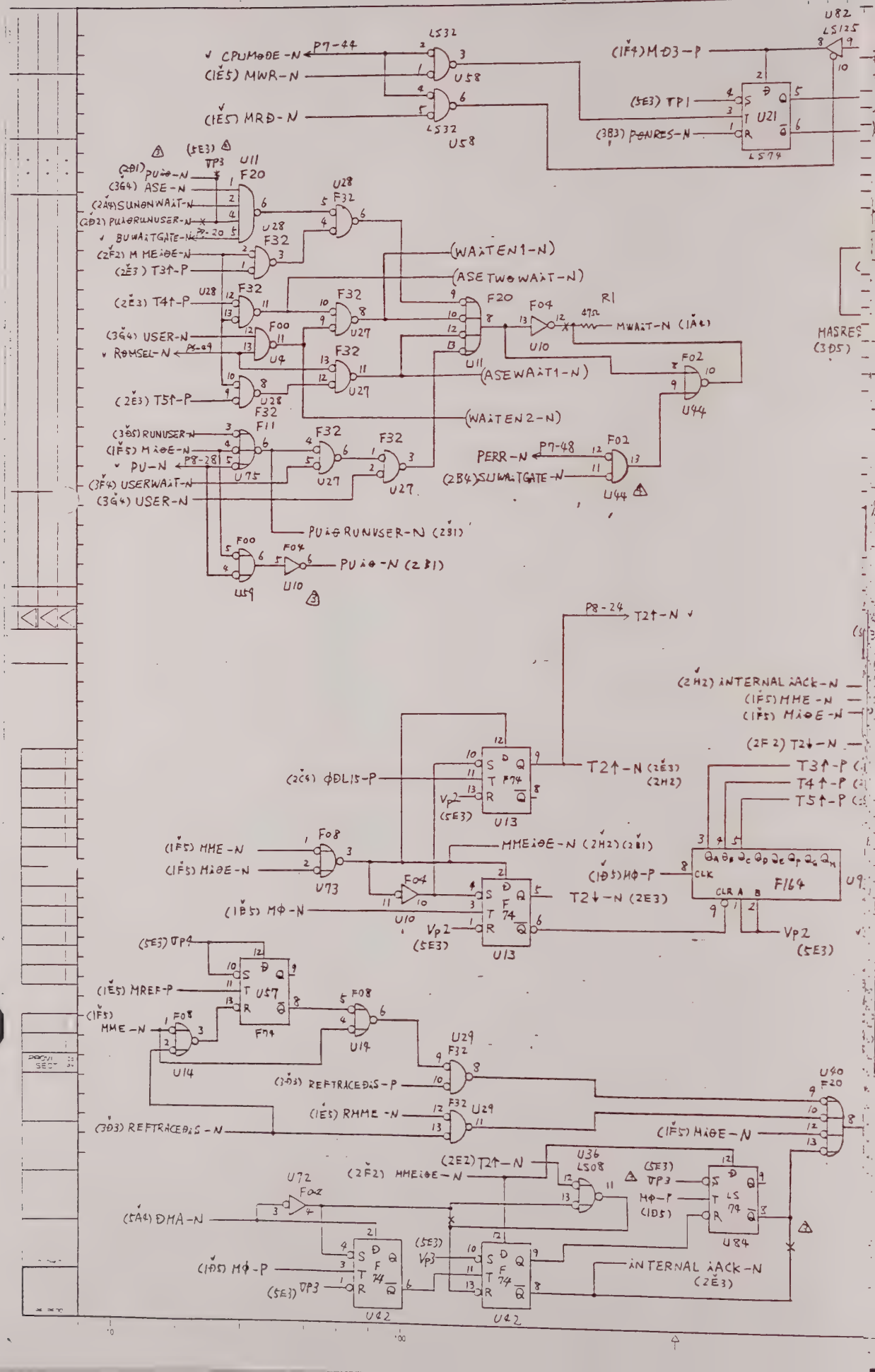
REMARKS	DWN A. Kakuta 86-01-13	PROJECT CN	TITLE		
H180 AS02	CHKD	SCALE NTS	BUF BUSY 回路		
	APPD		SIZE	CLASS	
Hitachi, Ltd. Tokyo Japan			MUSASHI WORKS DWG NO 343 3Y029 09		7/7

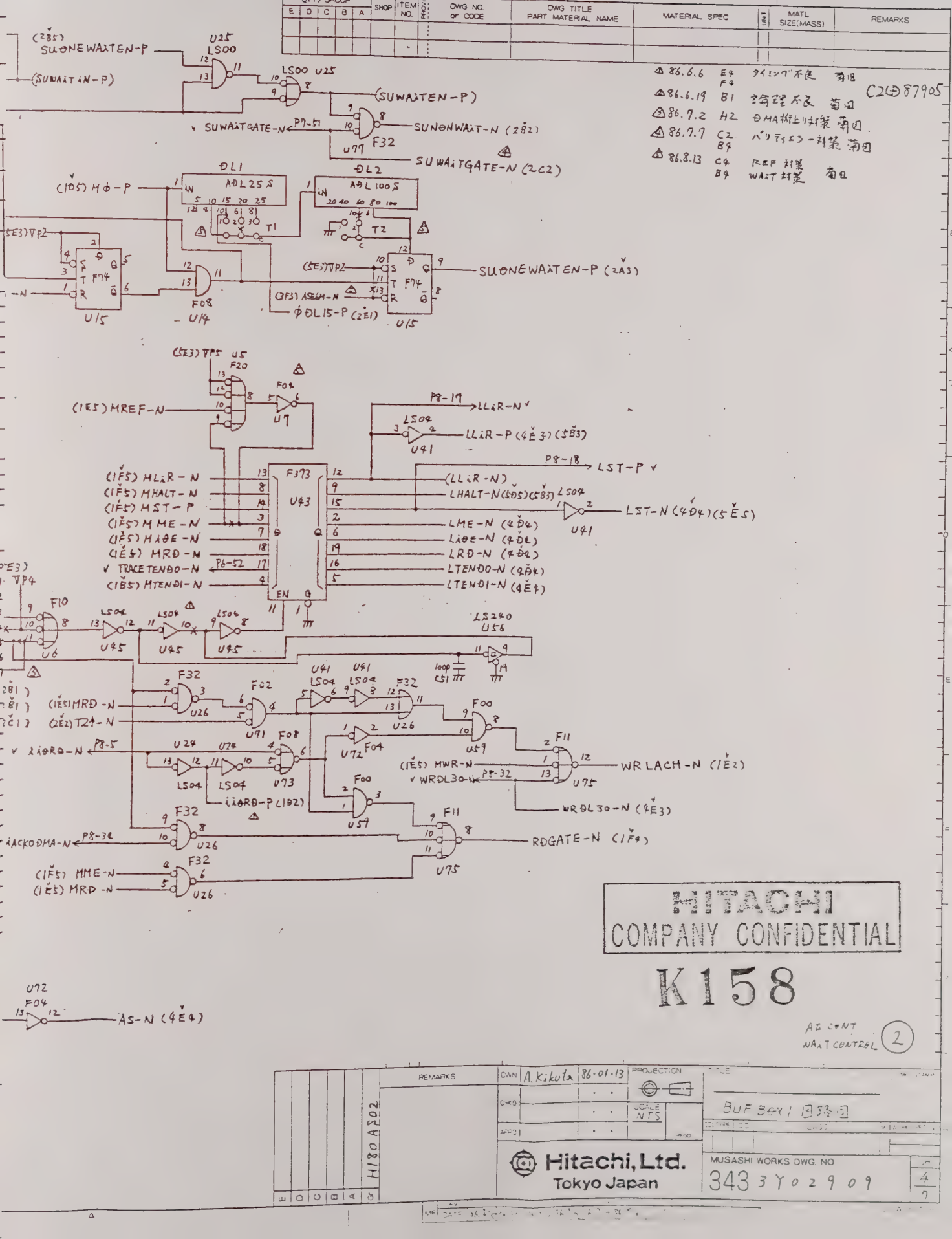

P4CONNECTOR.
N3 1KΩx8 +5V
N9 1KΩx8 +5V
N16 1KΩx4 +5V
N17 1.5KΩx8
N4 1.5KΩx8
N10 1.5KΩx8
U18
U34
U51
U19
U35
U52
U36
U25
U53
LS 646
F244
LS00
LS04
LS08
ALA1-P
ALA2-P
ALA3-P
ALA4-P
ALA5-P
ALA6-P
ALA7-P
ALA8-P
ALA9-P
ALA10-P
ALA11-P
APA12-P
APA13-P
APA14-P
APA15-P
APA16-P
APA17-P
APA18-P
ALA12-P
ALA13-P
ALA14-P
ALA15-P
ALAR-P/APA19-P
LA1~LA15-P (1A1),(1B1)
UNSTACK1-N
RETNANS-N
PA12~PA15-P (1G3)
PA16-P (1F3)
PA17-P (1F3)
PA18-P (1G4)
UARSEL-N (5B3)
UNSTACK-N (4G5)
(1G4) PA19-P
(2C5) LLAR-P
(1H3) PICCTYPE-P
(5A3) UARWRATE-N
UPA0~UPA19-P (1H2)
UAR REA
UAR WR

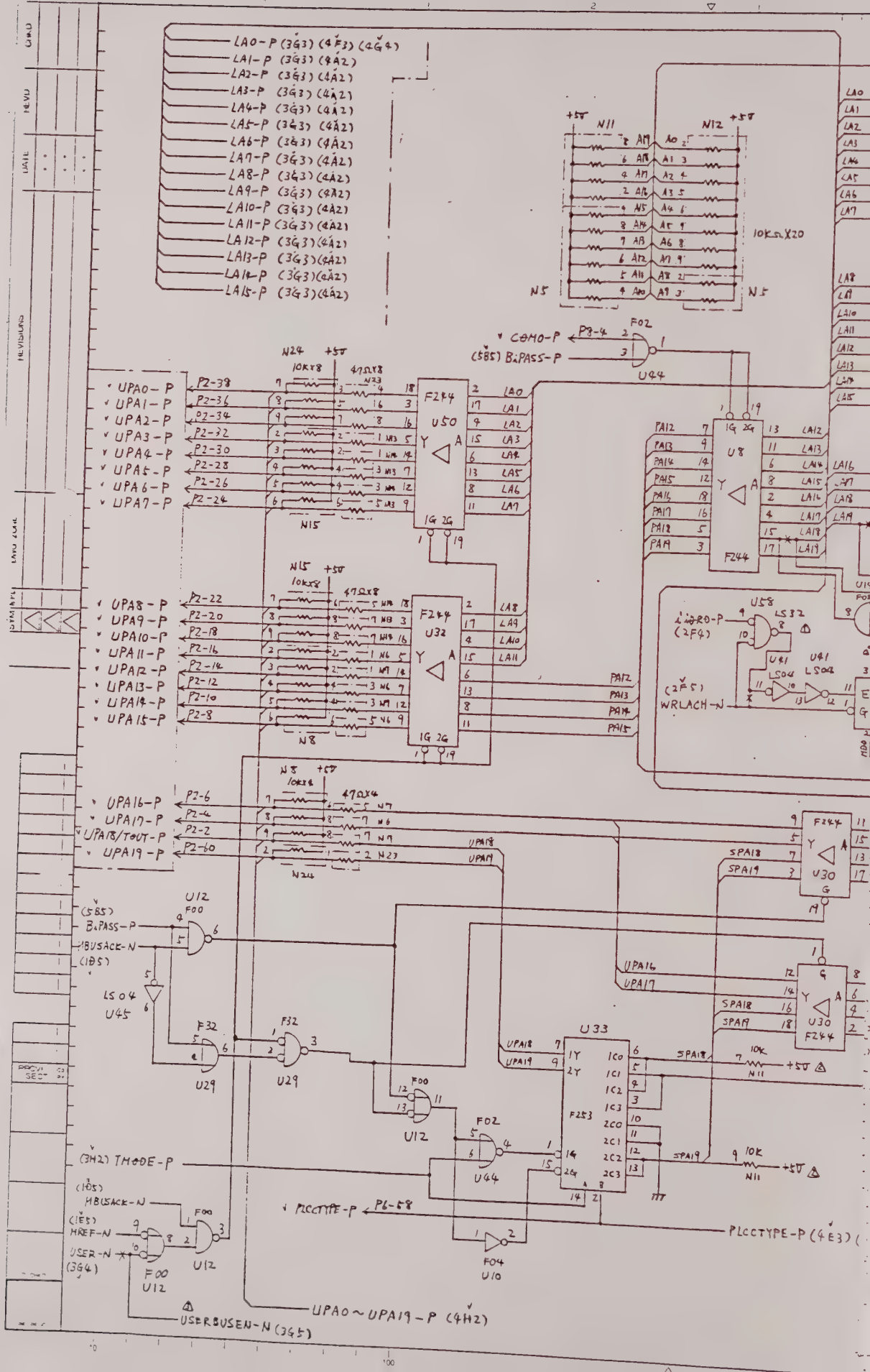

C2LD87905
P5 CONNECTOR
P4, P5 CONNECTOR
COMPANY CONFIDENTIAL
U1
U2
U3
U4
U5
U6
U7
U54
U55
U66
U67
U68
U69
U70
U71
U72
F240
F244
F245
F157
F00
F02
F04
F08
F10
F11
F20
F32
N1
N2
1K/1.5K
+5V
MD0 ~ MD7-P
MRD-N (1E5)
SU-N (4F4)
RAMSEL-N (4C4)
USK1-N (4F4)
DMA-N (5A4)
RETNANS-P (3B4)
STM-N (5A2)
USER-N (3G5)
USK0-N (4F4)
MWR-N (1E5)
WRDL30-N (2F5)
LA0-P (1A1)
DSINH-P
NPTDET-N
TRACERUNUSER-N
STEPUSER-N
WANUSER-N
UNSTACK-N
LME-N (2D5)
LABE-N (2D5)
LRD-N (2D5)
LST-N (2D5)
MREF-N (1E5)
LTEND0-N (2D5)
LTEND1-N (2D5)
WEXT5-N
WEXT6-P
WEXT7-P
AD0-P
AD1-P
AD2-P
AD3-P
AD4-P
AD5-P
AD6-P
AD7-P
AME-P
ABE-P
ARD-P
AST1-P
AREF-P
ATEND0-P
ATEND1-P
AEXT5-P
AEXT6-P
AEXT7-P
AEXT8-P/ALIR-P
AAS-N
AWR-N
AUDS-N
ALDS-N
ARAMSEL-N
AGDD-N
AWP-N
ASU-N
ALA0-P
ARUNUSER-N
ASTEP-N
AWANDOG-N
P8-53
P8-12
P8-33
P8-2
P8-10
P7-5
P7-1
P7-2
P7-4
P6-45
P8-38
P8-13
P8-9
P8-14
P4-37
P4-38
P4-39
P5-41
P5-43
P5-45
P5-47
P5-37
P5-39
P5-41
P5-2
P5-3
P5-4
P5-6
P5-7
P5-8
P5-10
P5-11
P5-12
P5-14
P5-15
P5-16
P5-18
P5-19
P5-20
P5-22
HITACHI
TRACE RUNUSER-N
WANUSER-N (3A5)
UNSTACK-N (4B7)
158
BUF BOX1
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG. NO
343 3Y029 09
H180AS02
A.Kakuta
86-01-13
SCALE NTS

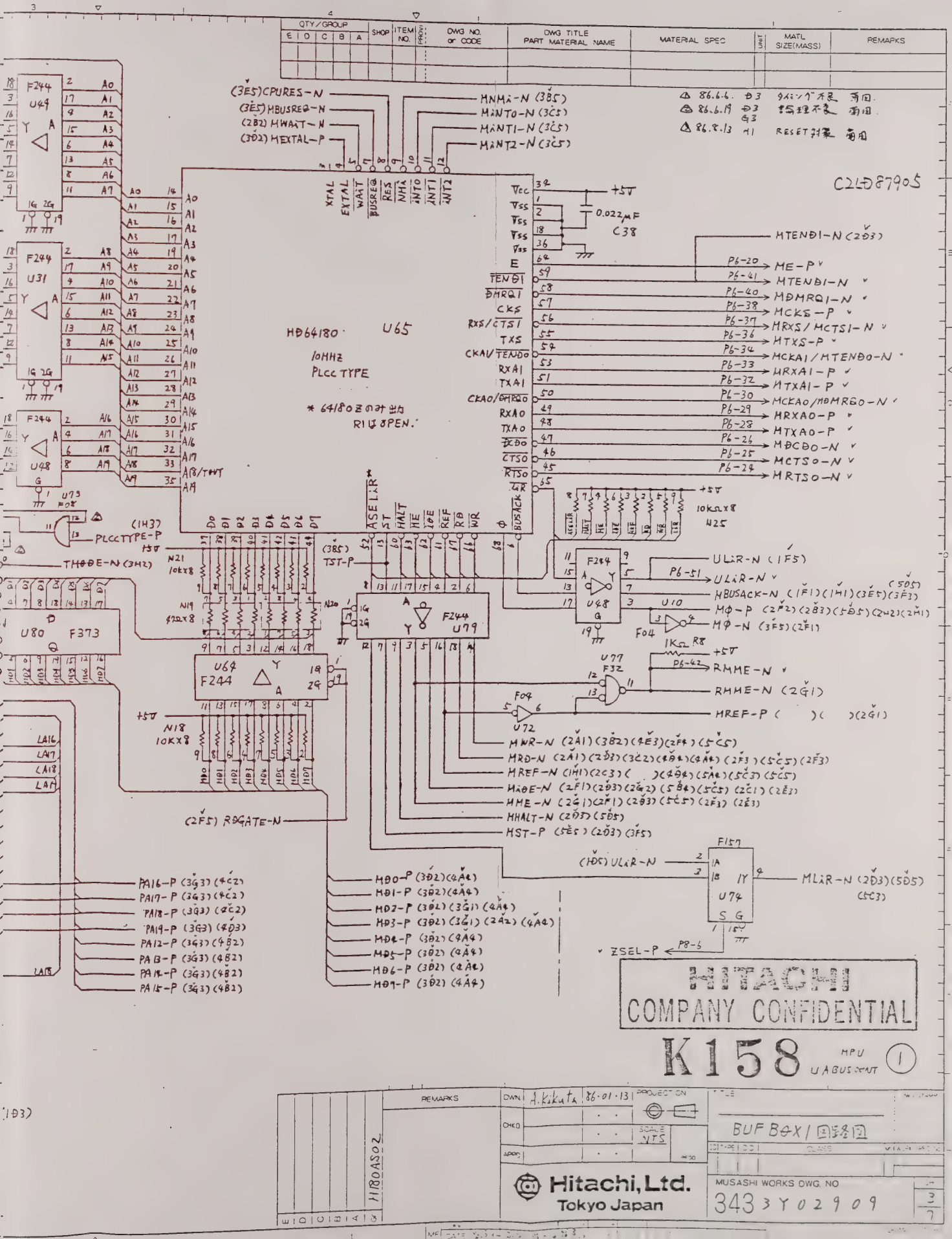

P2 CONNECTOR
RES-N
NMI-N
INTO-N
INT1-N
INT2-N
BUSACK-N
BUSREQ-N
WAIT-N
ST-P
EXTAL-P
U63
LS 244
LS175
U47
U82
LS125
U83
LS123
U25
LS00
U45
LS04
U46
U16
F153
U17
S74
X2
6.144MHz
X1
18.432MHz
U20
F244
LS 240
U24
LS04
U56
U71
F02
U38
LS32
U58
U39
F74
PONRES-N
ULSROSEL-N
ULSR2SEL-N
USER ST-P
USER BUSEN-N
USERCLKSEL-P
NOCLK-N
HEXTAL-P
A9MSEL-N
AUCLKMODE-N
A9MSEL-P
USERCLKSEL-P
TMODE-P
TMODE-N
TCTLRSTR-N
MRES-N
MWR-N
MRD-N
ASEGM-N
LA0~LA15-P
PA12~PAM-P


C2LD87905
QTY/GROUP E D C B A
SHOP
ITEM NO.
FROM
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
UNIT
MATL SIZE(MASS)
REMARKS
INT0
INT1
INT2
LS244
U62
ASE-N
NMi
U56
U57
F74
F32
U77
BREAKSET-P
P8-26
P8-25
ATE-N
REN-P (5B1)
REF TRACE DAS-P (2C1)
REF TRACE DAS-N (2C1)
NMASET-N
P8-29
WPTDET-N
RUNUSER-N
HALTNMi-N
P8-30
RETNENS-P
U61
U72
U68
U73
R15
MNMi-N (1A5)
TST-P (1D4)
R20
MINT2-N (1A5)
R19
MINT1-N (1A5) (3E5)
R18
MINT0-N (1A5)
R13
U60
U76
U81
LS125
LS08
LS32
F08
F11
RES
CYCLRES-N
P6-44
RUNUSER-N
P6-60
MASRES-N
P7-45
MASRES-N (2B3)
RUNUSER-N (3B5) ( ) (2C1)
MINT1-N (3C5)
BUSRES-N (3G4)
MRES-N (3H1)
P7-50
MMRES-N
CPURES -N (1A4)
R7
10K
R6
U37
F244
U20
NMi P7-60 UNMi-N
INTO P7-58 UINTO-N
INT1 P7-57 UINT1-N
INT2 P7-56 UINT2-N
BACK
MBUSACK-N (1D5)
R23
R21
R22
BREQ
MBUS REQ-N (1A4)
R25
WAIT
USER WAIT-N (2C1)
P7-6 LA0-P
P7-8 LA1-P
P7-9 LA2-P
P7-10 LA3-P
P7-12 LA4-P
P7-13 LA5-P
P7-14 LA6-P
P7-16 LA7-P
P7-17 LA8-P
P7-18 LA9-P
P7-20 LA10-P
P7-21 LA11-P
P7-22 LA12-P
P7-24 LA13-P
P7-25 LA14-P
P7-26 LA15-P
P7-28 PA12-P
P7-29 PA13-P
P7-30 PA14-P
P7-32 PA15-P
P7-33 PA16-P
P7-34 PA17-P
P7-36 PA18-P
P7-37 PA19-P
USER-N
P8-1
MBUSACK-N (1D5)
U24
F00
BUSDS -N
USERBUSEN-N (3D1) (1H1)
P8-50
USERBUSEN-N
USER-N (2C1) (1H1) (2C4) (2D1)
ASE-N (2B1) (3B4)
DMA-N (5A4)
MST-P (1F5)
MΦ-N (1B5)
Vp1 (5E3)
USERST-P (3C1)
HITACHI
COMPANY CONFIDENTIAL
K158
USER I/F Clock CONT RESET CONT
3
REMARKS
DWN A.Kikuta 86-01-13
PROJECT ON
CHK
APPD
SCALE NTS
TITLE
BUF Box I
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG NO
343 3 Y 0 2 9 0 9
5
7


CPUMODE-N
P7-44
(1E5) MWR-N
(1E5) MRD-N
U58
LS32
(1F4) MD3-P
(5E3) TP1
(3B3) PONRES-N
U21
LS74
U82
LS125
(5E3) TP3
(2B1) PUIO-N
(3G4) ASE-N
(2A4) SUNONWAIT-N
(2D2) PUIORUNUSER-N
BUSWAITGATE-N
P8-20
(2F2) MEMIOE-N
(2E3) T3↑-P
(2E3) T4↑-P
(3G4) USER-N
ROMSEL-N
P8-09
(2E3) T5↑-P
(3D5) RUNUSER-N
(1F5) MIOE-N
PU-N
P8-28
(3F4) USERWAIT-N
(3G4) USER-N
U11
F20
U28
F32
F00
F04
F11
U4
U75
U27
U59
U10
(WAITEN1-N)
(ASETWOWAIT-N)
(ASEWAIT1-N)
(WAITEN2-N)
R1
47Ω
MWAIT-N (1A2)
F02
U44
PERR-N
P7-48
(2B4) SUSWAITGATE-N
PUIORUNUSER-N (2B1)
PUIO-N (2B1)
MASRES (3D5)
P8-24
T2↑-N
(2H2) INTERNAL IACK-N
(1F5) MME-N
(1F5) MIOE-N
(2F2) T2↓-N
T3↑-P
T4↑-P
T5↑-P
(2C4) ΦDL15-P
T2↑-N (2E3) (2H2)
U13
F74
Vp2 (5E3)
F08
U73
(1F5) MME-N
(1F5) MIOE-N
MMEIOE-N (2H2) (2B1)
(1B5) MΦ-P
(1B5) MΦ-N
T2↓-N (2E3)
F164
U9
CLK
CLR A B
(5E3) TP4
(1E5) MREF-P
(1F5) MME-N
U57
U14
U29
F32
(3D3) REFTRACEDIS-P
(1E5) RMME-N
(3D3) REFTRACEDIS-N
U40
F20
(1F5) MIOE-N
(2E2) T2↑-N
(2F2) MMEIOE-N
U36
LS08
(5E3) TP3
MΦ-P (1D5)
U84
LS74
U72
F02
(5A4) DMA-N
U42
(1D5) MΦ-P
(5E3) TP3
(5E3) Vp3
INTERNAL IACK-N (2E3)


SUONEWAITEN-P
(SUWAITAN-P)
U25
LS00
(SUWAITEN-P)
SUWAITGATE-N
P7-51
SUONWAIT-N (2B2)
F32
U77
SUWAITGATE-N (2C2)
DL1
ADL 25nS
DL2
ADL 100nS
(10B) MΦ-P
T1
T2
F74
F08
U15
U14
(5E3) TP2
SUONEWAITEN-P (2A3)
(3F3) ASEM-N
ΦDL15-P (2E1)
(1E5) MREF-N
F20
F02
U7
P8-19
LLiR-N
LS04
LLiR-P (4E3) (5B3)
U41
P8-18
LST-P
F373
U43
(1F5) MLiR-N
(1F5) MHALT-N
(1E5) MST-P
(1E5) MME-N
(1E5) MiOE-N
(1E5) MRD-N
TRACETENBO-N
P6-52
(1B5) MTENDI-N
LHALT-N (5D5) (5B3)
LST-N (4D4) (5E5)
LME-N (4D4)
LiOE-N (4D2)
LRD-N (4D2)
LTENDO-N (4D4)
LTENDI-N (4E4)
F10
U6
U45
LS240
U56
F32
U26
F02
U71
(1E5) MRD-N
(2E2) T24-N
F08
U73
P8-5
LiORD-N
LS04
U24
U72
F04
F00
U57
F11
U59
U75
(1E5) MWR-N
WRLACH-N (1E2)
WRDL30-N
P8-32
WRDL30-N (4E3)
RDGATE-N (1F4)
AACKODMA-N
P8-30
(1F5) MME-N
(1E5) MRD-N
U72
F04
AS-N (4E4)
AS CONT
WAIT CONTROL
2
HITACHI
COMPANY CONFIDENTIAL
K158
C2 87905
86.6.6 E4 F4 タイミング不良 第1回
86.6.19 B1 論理不良 第1回
86.7.2 H2 DMA誤作り対策 第1回
86.7.7 C2 B4 パリティエラー対策 第1回
86.8.13 C4 B4 REF対策 WAIT対策 第1回
SHOP
ITEM NO.
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
MATL SIZE(MASS)
REMARKS
H180AS02
A. Kikuta
86-01-13
PROJECTION
SCALE NTS
BUF Sel 1 回路図
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG. NO
3433Y02909
4
7


LA0-P (3G3) (4F3) (2G4)
LA1-P (3G3) (4A2)
LA2-P (3G3) (4A2)
LA3-P (3G3) (4A2)
LA4-P (3G3) (4A2)
LA5-P (3G3) (4A2)
LA6-P (3G3) (4A2)
LA7-P (3G3) (4A2)
LA8-P (3G3) (4A2)
LA9-P (3G3) (4A2)
LA10-P (3G3) (4A2)
LA11-P (3G3) (4A2)
LA12-P (3G3) (4A2)
LA13-P (3G3) (4A2)
LA14-P (3G3) (4A2)
LA15-P (3G3) (4A2)
N11
N12
10KΩX20
N5
C0M0-P
P8-4
(5B5) BYPASS-P
F02
U44
N24
10KΩX8
47ΩX8
UPA0-P
UPA1-P
UPA2-P
UPA3-P
UPA4-P
UPA5-P
UPA6-P
UPA7-P
P2-38
P2-36
P2-34
P2-32
P2-30
P2-28
P2-26
P2-24
N15
F244
U50
LA0
LA1
LA2
LA3
LA4
LA5
LA6
LA7
U8
F244
PA12
PA13
PA14
PA15
PA16
PA17
PA18
PA19
LA12
LA13
LA14
LA15
LA16
LA17
LA18
LA19
U58
LS32
U61
LS04
WRLACH-N
(2F5)
UPA8-P
UPA9-P
UPA10-P
UPA11-P
UPA12-P
UPA13-P
UPA14-P
UPA15-P
P2-22
P2-20
P2-18
P2-16
P2-14
P2-12
P2-10
P2-8
N8
U32
LA8
LA9
LA10
LA11
UPA16-P
UPA17-P
UPA18/TOUT-P
UPA19-P
P2-6
P2-4
P2-2
P2-60
N27
U30
SPA18
SPA19
U12
F00
(5B5)
BYPASS-P
HBUSACK-N
(1B5)
LS04
U45
F32
U29
U33
F253
10K
N11
+5V
(3H2) TMODE-P
(1B5)
HBUSACK-N
(1E5)
HREF-N
USER-N
(3G4)
U10
F04
PLCCTYPE-P P6-58
PLCCTYPE-P (4E3)
UPA0~UPA19-P (4H2)
USERBUSEN-N (3A5)


HD64180
U65
10MHz
PLCC TYPE
* 64180Eのみ使用
RIはOPEN.
C2LD87905
(3E5)CPURES-N
(3E5)HBUSREQ-N
(2B2)HWAIT-N
(3D2)HEXTAL-P
HNMI-N (3B5)
HINT0-N (3C5)
HINT1-N (3C5)
HINT2-N (3C5)
XTAL
EXTAL
WAIT
BUSREQ
RES
NMI
INT0
INT1
INT2
Vcc
Vss
E
TEND1
DMRQ1
CKS
RXS/CTS1
TXS
CKA0/TEND0
RXA1
TXA1
CKA0/DMRQ0
RXA0
TXA0
DCD0
CTS0
RTS0
4R
BUSACK
0.022μF
C38
+5V
HTEND1-N (2D3)
P6-20 ME-P
P6-41 MTEND1-N
P6-40 MDMRQ1-N
P6-38 MCKS-P
P6-37 MRXS/MCTS1-N
P6-36 MTXS-P
P6-34 MCKA1/MTEND0-N
P6-33 MRXA1-P
P6-32 MTXA1-P
P6-30 MCKA0/MDMRQ0-N
P6-29 MRXA0-P
P6-28 MTXA0-P
P6-26 MDCD0-N
P6-25 MCTS0-N
P6-24 MRTS0-N
10kΩx8
U25
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
A16
A17
A18/TMT
A19
F244
U49
U31
U48
U73
F08
(1H3)
PLCCTYPE-P
THODE-N (3H2)
N21
10kx8
N19
472x8
N20
(3B5)
TST-P
ASEL1R*
ST
HALT
HE
IOE
REF
RD
WR
D0
D1
D2
D3
D4
D5
D6
D7
U80
F373
U64
F244
U79
N18
10KX8
MD0
MD1
MD2
MD3
MD4
MD5
MD6
MD7
ULIR-N (1F5)
P6-51 ULIR-N
MBUSACK-N (1F1)(1H1)(3E5)(3F3)(5D5)
MΦ-P (2F2)(2B3)(5D5)(2H2)(2H1)
MΦ-N (3F5)(2F1)
U10
F04
1kΩ R8
U77
F32
P6-42 RMME-N
RMME-N (2G1)
MREF-P ( )( )(2G1)
U72
MWR-N (2A1)(3B2)(4E3)(2F4)(5C5)
MRD-N (2A1)(2D3)(3C2)(4B4)(4A4)(2F3)(5C5)(2F3)
MREF-N (1H1)(2C3)( )(4B4)(5A4)(5C3)(5C5)
MIOE-N (2F1)(2D3)(2G2)(5B4)(5C5)(2C1)(2E3)
MME-N (2G1)(2F1)(2D3)(5C5)(2F3)(2E3)
MHALT-N (2D5)(5D5)
MST-P (5E5)(2D3)(3F5)
(2F5) RDGATE-N
(HD5) ULIR-N
F157
U74
MLIR-N (2D3)(5D5) (5C3)
ZSEL-P P8-6
MD0-P (3D2)(4A4)
MD1-P (3D2)(4A4)
MD2-P (3D2)(3G1)(4A4)
MD3-P (3D2)(3G1)(2A2)(4A4)
MD4-P (3D2)(4A4)
MD5-P (3D2)(4A4)
MD6-P (3D2)(4A4)
MD7-P (3D2)(4A4)
PA16-P (3G3)(4C2)
PA17-P (3G3)(4C2)
PA18-P (3G3)(4C2)
PA19-P (3G3)(4D3)
PA12-P (3G3)(4B2)
PA13-P (3G3)(4B2)
PA14-P (3G3)(4B2)
PA15-P (3G3)(4B2)
LA16
LA17
LA18
LA19
LA15
86.6.6. D3 ﾀｲﾐﾝｸﾞ不良 再回.
86.6.19 D3 G3 信号処理不良 再回.
86.8.13 A1 RESET対策 再回
HITACHI
COMPANY CONFIDENTIAL
K158 MPU
U A BUS CONT
1
Hitachi, Ltd.
Tokyo Japan
BUF BOX
MUSASHI WORKS DWG. NO
3433Y02909
3
7

P4 CONNECTOR

GND	1	(5G1)	GND
ALA1-P	2	(4A1)	AA1-P
ALA2-P	3	(4A1)	AA2-P
ALA3-P	4	(4A1)	AA3-P
GND	5	(5G1)	GND
ALA4-P	6	(4A1)	AA4-P
ALA5-P	7	(4B1)	AA5-P
ALA6-P	8	(4B1)	AA6-P
GND	9	(5G1)	GND
ALA7-P	10	(4B1)	AA7-P
ALA8-P	11	(4B1)	AA8-P
ALA9-P	12	(4B1)	AA9-P
GND	13	(5G1)	GND
ALA10-P	14	(4B1)	AA10-P
ALA11-P	15	(4C1)	AA11-P
APA12-P	16	(4C1)	AA12-P
GND	17	(5G1)	GND
APA13-P	18	(4C1)	AA13-P
GND	19	(5G1)	GND
APA14-P	20	(4C1)	AA14-P
+5V	21	(5E1)	+5V
APA15-P	22	(4C1)	AA15-P
+5V	23	(5E1)	+5V
APA16-P	24	(4C1)	AA16-P
+5V	25	(5E1)	+5V
APA17-P	26	(4C1)	AA17-P
APA18-P	27	(4C1)	AA18-P
+5V	28	(5E1)	+5V
ALA12-P	29	(4D1)	AA19-P
+5V	30	(5E1)	+5V
ALA13-P	31	(4D1)	AA20-P
GND	32	(5G1)	GND
ALA14-P	33	(4D1)	AA21-P
ALA15-P	34	(4D1)	AA22-P
ALA16-P/APA19-P	35	(4D1)	AA23-P
GND	36	(5G1)	GND
AEXT6-P	37	(4E6)	AFC0-P
AEXT7-P	38	(4E6)	AFC1-P
AEXT8-P/ALA17-P	39	(4E6)	AFC2-P
GND	40	(5G1)	GND
ASU-N	41	(4G6)	ASU-N
GND	42	(5G1)	GND
ALA0-P	43	(4G6)	APU-N
GND	44	(5G1)	GND
AWP-N	45	(4F6)	AWP-N
GND	46	(5G1)	GND
AGDD-N	47	(4F6)	AGDD-N
GND	48	(5G1)	GND
ARAMSEL-N	49	(4F6)	ARAMSEL-N
GND	50	(5G1)	GND

GND	1	
AD0-P	2	
AD1-P	3	
AD2-P	4	
GND	5	
AD3-P	6	
AD4-P	7	
AD5-P	8	
GND	9	
AD6-P	10	
AD7-P	11	
AME-P	12	
GND	13	
AIOE-P	14	
ARD-P	15	
ASTI-P	16	
GND	17	
AREF-P	18	
ATEND0-P	19	
ATEND1-P	20	
+5V	21	
AEXT5-P	22	
+5V	23	
ASTM-N	24	
+5V	25	
N.C.	26	
AUCLKMODE-N	27	
+5V	28	
AUARWRITE-N	29	
+5V	30	
AUARREAD-N	31	
GND	32	
A9MSEL-N	33	
GND	34	
ANDCLK-N	35	
GND	36	
ARUNUSER-N	37	
GND	38	
ASTEP-N	39	
GND	40	
AWINDOW-N	41	
GND	42	
AWR-N	43	
GND	44	
AUDS-N	45	
GND	46	
ALDS-N	47	
GND	48	
AAS-N	49	
GND	50	

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	CHANGE	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD87905

P5 CONNECTOR

(5G1)	GND
(4B6)	AD0-P
(4B6)	AD1-P
(4B6)	AD2-P
(5G1)	GND
(4B6)	AD3-P
(4B6)	AD4-P
(4B6)	AD5-P
(5G1)	GND
(4B6)	AD6-P
(4B6)	AD7-P
(4C6)	AD8-P
(5G1)	GND
(4C6)	AD9-P
(4C6)	AD10-P
(4C6)	AD11-P
(5G1)	GND
(4C6)	AD12-P
(4C6)	AD13-P
(4C6)	AD14-P
(5E1)	+5V
(4C6)	AD15-P
(5E1)	+5V
(5A1)	STM-N
(5E1)	+5V
	ILGBREAK-N
(3F1)	ACLKMODE-N
(5E1)	+5V
(5A1)	AUARWRITE-N
(5E1)	+5V
(5A1)	AUARREAD-N
(5G1)	GND
(3F1)	A16SEL-N
(5G1)	GND
(5A1)	ANBCLK-N
(5G1)	GND
(4G6)	ARUNUSER-N
(5G1)	GND
(4G6)	ASTEP-N
(5G1)	GND
(4G6)	AWINDOW-N
(5G1)	GND
(4E6)	AWRITE-N
(5G1)	GND
(4F6)	AUDS-N
(5G1)	GND
(4F6)	ALDS-N
(5G1)	GND
(4E6)	AAS-N
(5G1)	GND

P8 CONNECTOR

USER-N	1	(3F4)
RAMSEL-N	2	(4C3)
GND	3	(5G1)
COMO-P	4	(1B2)
IIORD-N	5	(2E3)
ESEL-P	6	(1G5)
N.C.	7	
DSANH-P	8	(4F4)
UNSTACK-N	9	(4G4)
UNSTACKO-N	10	(4C3)
GND	11	(5G1)
UNSTACKI-N	12	(4B3)
STEPUSER-N	13	(4G4)
WINUSER-N	14	(4G4)
N.C.	15	
THODE-N	16	(3H2)
LLIR-N	17	(2C5)
LST-P	18	(2D5)
GND	19	(5G1)
BUWAITEGATE-N	20	(2B1)
IRQESEL-N	21	(3B2)
ULSROSEL-N	22	(3A1)
GND	23	(5G1)
T2T-N	24	(2D2)
ATE-N	25	(3C3)
BREAKSET-P	26	(3C4)
GND	27	(5G1)
PU-N	28	(2C1)
NMISET-N	29	(3A5)
HALTNMI-N	30	(3B5)
GND	31	(5G1)
WRDL30-N	32	(2F4)
RETNINS-N	33	(4B3)
IACKODMA-N	34	(2F3)
GND	35	(5G1)
MEMWIND-N	36	
DMA-N	37	(5A2)
TRACERUNUSER-N	38	(4G4)
GND	39	(5G1)
BYPASS-P	40	(5B5)

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REMARKS				
	DWN	A.Kakuta	86-01-13	PROJECTION
	CHKD			
	APPD			SCALE NTS

H180A5202

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Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG. NO.
343 3Y 02909

2
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P2 CONNECTOR

GND	1	(5G1)
UPAIR/TOUT-P	2	(1E1)
GND	3	(5G1)
UPA17-P	4	(1E1)
GND	5	(5G1)
UPA16-P	6	(1E1)
GND	7	(5G1)
UPA15-P	8	(1D1)
GND	9	(5G1)
UPA14-P	10	(1D1)
GND	11	(5G1)
UPA13-P	12	(1D1)
GND	13	(5G1)
UPA12-P	14	(1D1)
GND	15	(5G1)
UPA11-P	16	(1D1)
GND	17	(5G1)
UPA10-P	18	(1D1)
GND	19	(5G1)
UPA9-P	20	(1D1)
GND	21	(5G1)
UPA8-P	22	(1D1)
GND	23	(5G1)
UPA7-P	24	(1C1)
GND	25	(5G1)
UPA6-P	26	(1C1)
GND	27	(5G1)
UPA5-P	28	(1C1)
GND	29	(5G1)
UPA4-P	30	(1C1)
GND	31	(5G1)
UPA3-P	32	(1C1)
GND	33	(5G1)
UPA2-P	34	(1C1)
GND	35	(5G1)
UPA1-P	36	(1C1)
GND	37	(5G1)
UPA0-P	38	(1C1)
GND	39	(5G1)
ST-P	40	(3B1)
GND	41	(5G1)
INT2-N	42	(3A1)
GND	43	(5G1)
INT1-N	44	(3A1)
GND	45	(5G1)
INT0-N	46	(3A1)
GND	47	(5G1)
NMI-N	48	(3A1)
GND	49	(5G1)
RES-N	50	(3A1)
GND	51	(5G1)
BUSREQ-N	52	(3A1)
GND	53	(5G1)
BUSACK-N	54	(3A1)
GND	55	(5G1)
WAIT-N	56	(3B1)
GND	57	(5G1)
EXTAL-P	58	(3B1)
GND	59	(5G1)
UPA19-P	60	(1F1)

MD0-P	1	
MD1-P	2	
GND	3	
MD2-P	4	
MD3-P	5	
MD4-P	6	
N.C.	7	
MD5-P	8	
MD6-P	9	
MD7-P	10	
GND	11	
MMWR-N	12	
MMRD-N	13	
BME-N	14	
N.C.	15	
BUSE-N	16	
BREF-N	17	
MΦ-P	18	
GND	19	
ME-P	20	
MLIR-N	21	
MHALT-N	22	
+5V	23	
MRTSO-N	24	
MCTSO-N	25	
MDCDO-N	26	
+5V	27	
MTXAO-P	28	
MRXAO-P	29	
MCKAO/MDMRQO-N	30	
+5V	31	
MTXAI-P	32	
MRXAI-P	33	
MCKAI/MTENDO-N	34	
+5V	35	
MTXS-P	36	
MRXS/MCTSI-N	37	
MCKS-P	38	
GND	39	
MDMRQI-N	40	
MTENDI-N	41	
RMME-N	42	
INSERT-P	43	
CYCLRES-N	44	
WPTDET-N	45	
PONRES-N	46	
GND	47	
N.C.	48	
ROMSEL-N	49	
USERBUSEN-N	50	
ULIR-N	51	
TRACETENDO-N	52	
SU-N	53	
MST-P	54	
GND	55	
RELOCATION-P	56	
N.C.	57	
PLCCTYPE-P	58	
GND	59	
RUNUSER-N	60	

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	PROV	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD87905

P6 CONNECTOR

(3D3)
(3D3)
(5G1)
(3D3)
(3D3)
(3E3)

(3E3)
(3E3)
(3E3)
(5G1)
(5C5)
(5C5)
(5C5)

(5C5)
(5C5)
(5D5)
(5G1)
(1B5)
(4B5)
(5D5)
(5E1)
(1C5)
(1C5)
(1C5)
(5E1)
(1C5)
(1C5)
(1C5)
(1C5)
(5E1)
(1C5)
(4B5)
(B5)
(5G1)
(4B5)
(4B5)
(4E5)

(3D4)
(1F4)
(3B2)
(5G1)

(2C1)
(5G5)
(4D5)
(3D3)
(1A3)
(5E5)
(5G1)

(4H1)
(5G1)
(3D4)

P7 CONNECTOR

WEXT5-N	1	(4E4)
WEXT6-P	2	(4E4)
GND	3	(5G1)
WEXT7-P	4	(4E4)
WEXT8-P	5	(4E3)
LA0-P	6	(3E3)
N.C.	7	
LA1-P	8	(3E3)
LA2-P	9	(3E3)
LA3-P	10	(3E3)
GND	11	(5G1)
LA4-P	12	(3F3)
LA5-P	13	(3F3)
LA6-P	14	(3F3)
N.C.	15	
LA7-P	16	(3F3)
LA8-P	17	(3F3)
LA9-P	18	(3F3)
GND	19	(5G1)
LA10-P	20	(3F3)
LA11-P	21	(3F3)
LA12-P	22	(3F3)
+5V	23	(5E1)
LA13-P	24	(3F3)
LA14-P	25	(3F3)
LA15-P	26	(3F3)
+5V	27	(5E1)
PA12-P	28	(3G3)
PA13-P	29	(3G3)
PA14-P	30	(3G3)
+5V	31	(5E1)
PA15-P	32	(3G3)
PA16-P	33	(3G3)
PA17-P	34	(3G3)
+5V	35	(5E1)
PA18-P	36	(3G3)
PA19-P	37	(3G3)
TCTLRSTR-N	38	(3H1)
GND	39	(5G1)
ULSR1SEL-N	40	
ULSR2SEL-N	41	(3C1)
BCMDRSEL-N	42	
MCRSEL-N	43	
CPUMODE-N	44	(2A1)
MASRES-N	45	(3D4)
BREAK-N	46	
GND	47	(5G1)
PERR-N	48	(2C2)
STACK-N	49	
MMRES-N	50	(3D5)
SUNAATGATE-N	51	(2A4)
LHALT-N	52	(5D5)
LST-N	53	(5E5)
MBUSACK-N	54	(5D5)
GND	55	(5G1)
UINT2-N	56	(3E4)
UINT1-N	57	(3E4)
UINT0-N	58	(3D4)
GND	59	(5G1)
UNMI-N	60	(3D4)

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K158

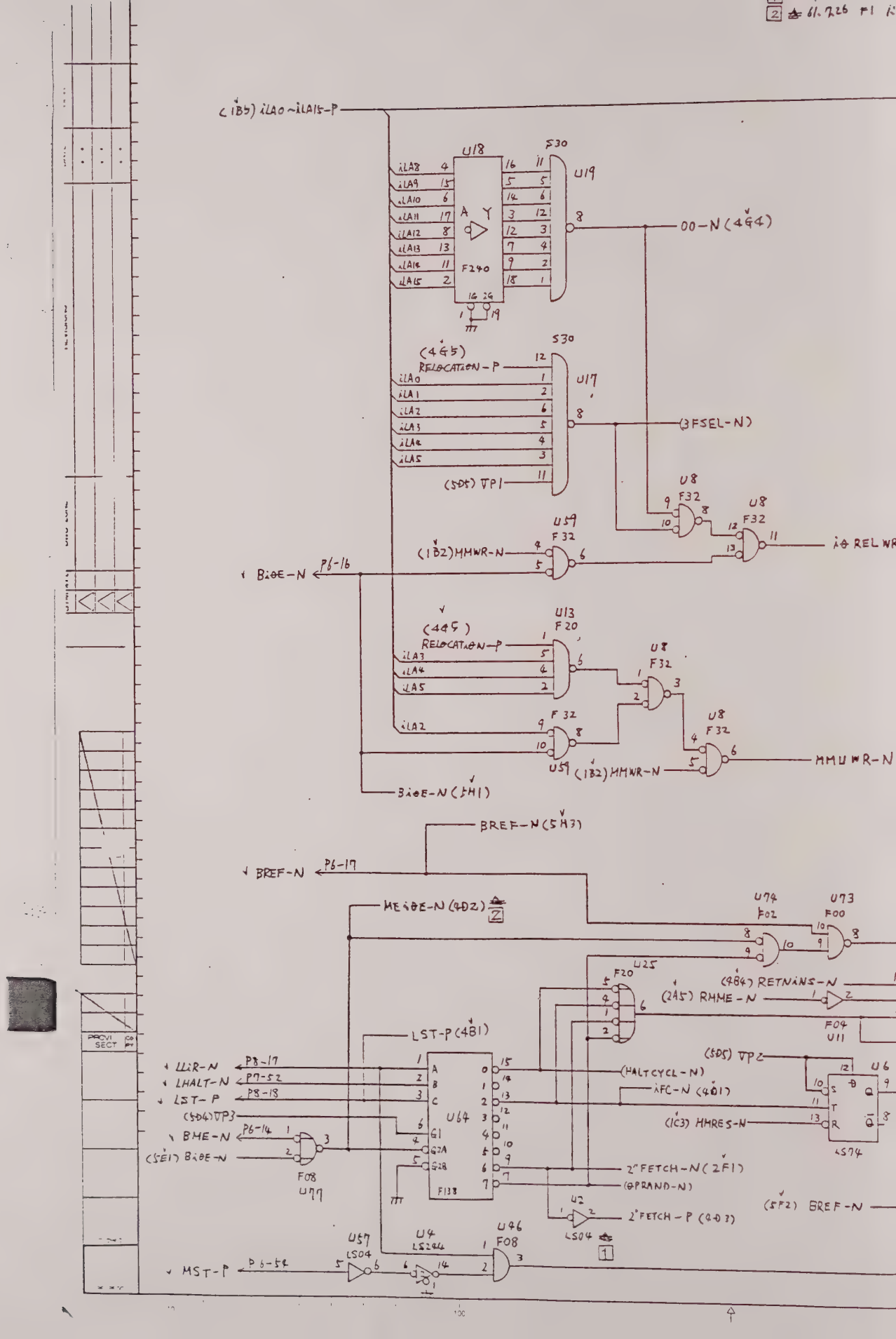
REMARKS					
	DWN	A.Kakuta	86-01-13	PROJECTION	TITLE
	CHKD				BUF 3ステート回路
	APPD			SCALE VTS	SIZE A3

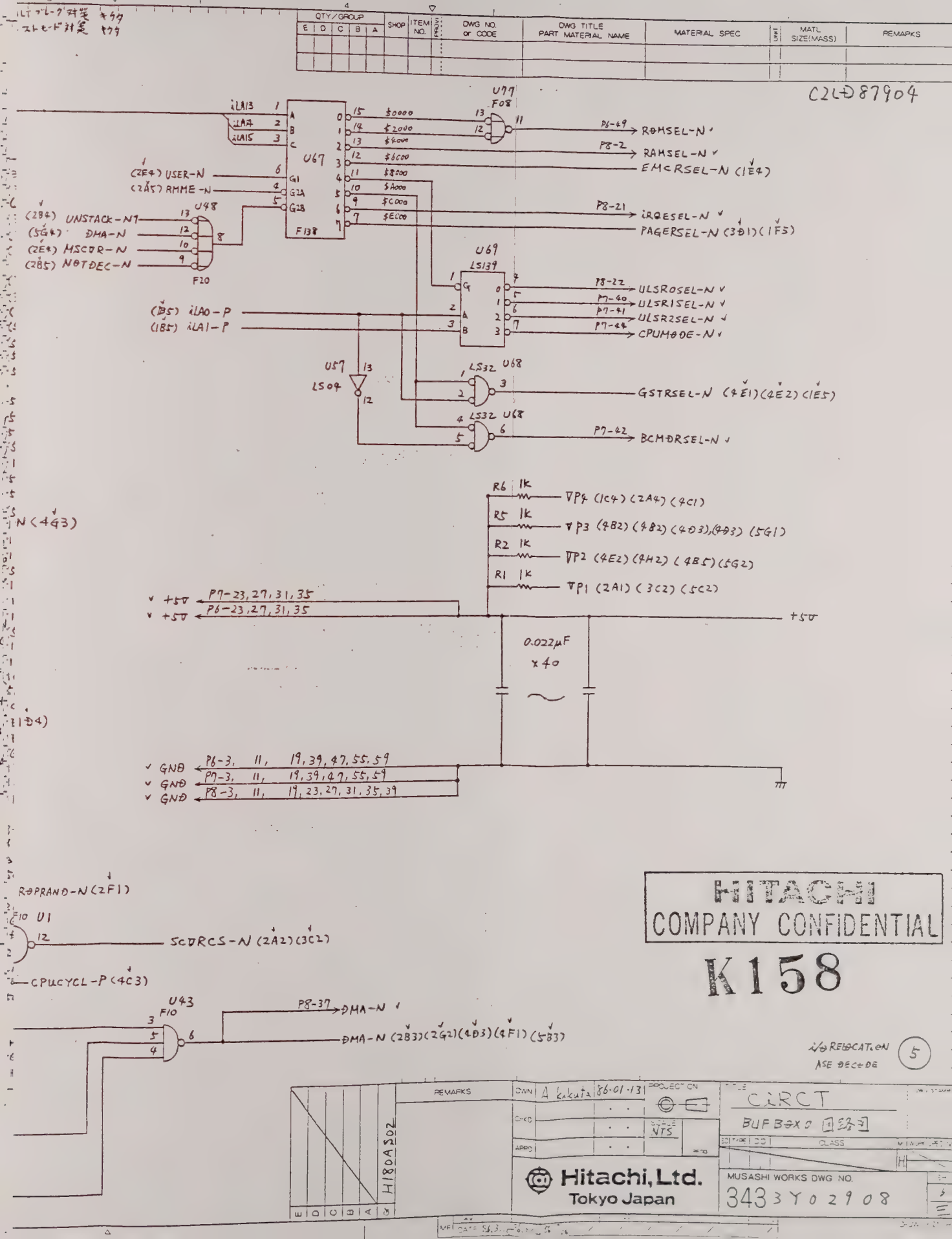
Hitachi, Ltd.
Tokyo Japan

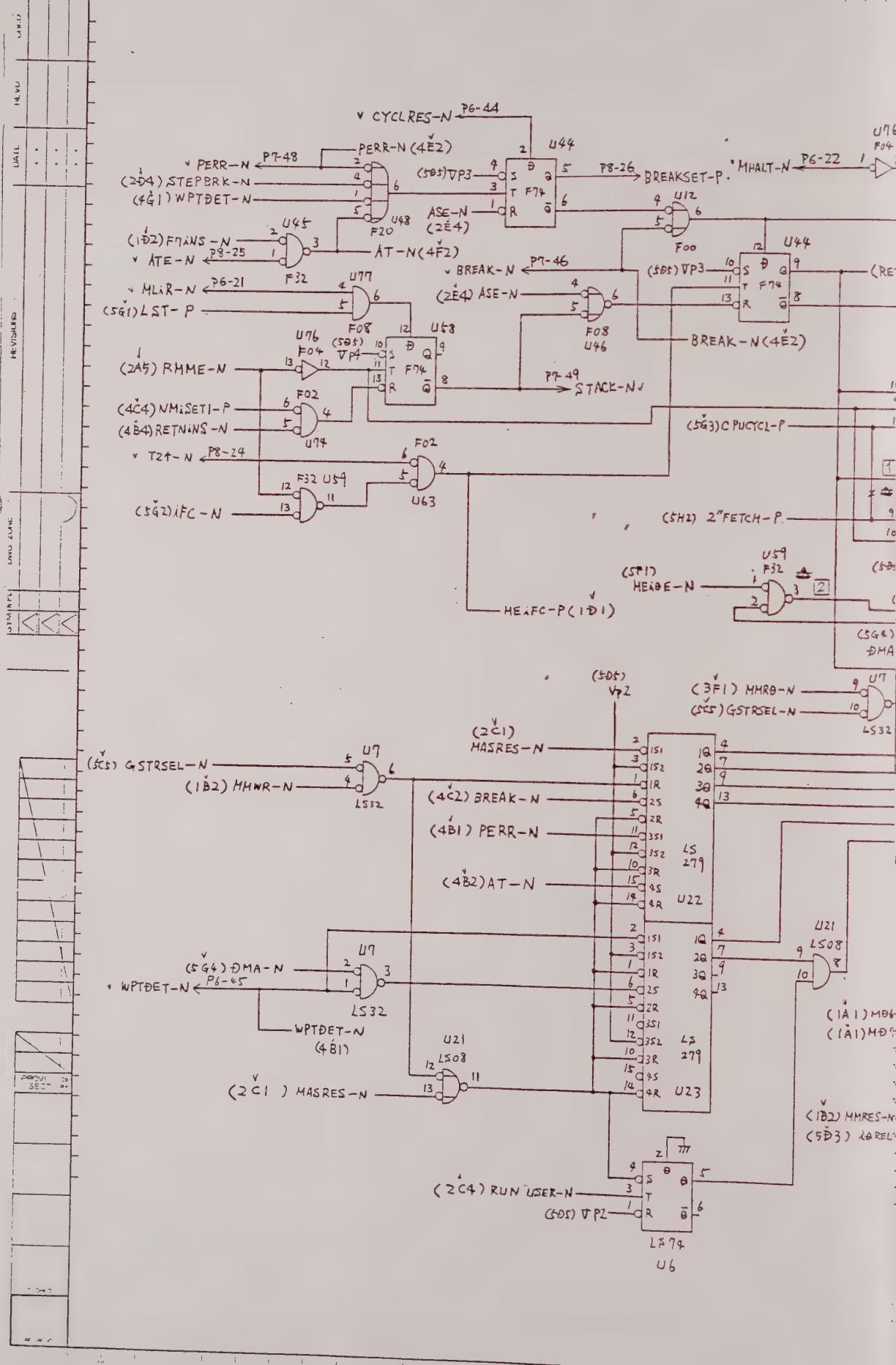
MUSASHI WORKS DWG. NO
343 3Y029 09

1/7

H180AS02


(1B5) iLA0 ~iLA15-P
U18
F240
S30
U19
iLA8
iLA9
iLA10
iLA11
iLA12
iLA13
iLA14
iLA15
00-N (4G4)
(4G5)
RELOCATION-P
iLA0
iLA1
iLA2
iLA3
iLA4
iLA5
(5D5) TP1
U17
(3FSEL-N)
U8
F32
U59
(1B2) MMWR-N
BIOE-N P6-16
(4A5)
U13
F20
iLA7
iLA6
BIOE-N (5H1)
MMU WR-N
BREF-N (5H3)
BREF-N P6-17
MEMOE-N (4D2)
U74
F02
U73
F00
U25
(4B4) REFRINS-N
(2A5) RMME-N
F04
U11
LST-P (4B1)
LLIR-N P8-17
LHALT-N P7-52
LST-P P8-18
(5D4) TP3
BME-N P6-14
(5E1) BIOE-N
U64
F138
F08
U77
(HALTCYCL-N)
iFC-N (4D1)
(1C3) MMRES-N
U6
LS74
2" FETCH-N (2F1)
(BRAND-N)
2" FETCH-P (4D3)
U2
LS04
(5F2) BREF-N
U57
LS04
U4
LS244
U46
F08
MST-P P6-54


QTY/GROUP E D C B A
SHOP
ITEM NO.
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
MATL SIZE(MASS)
REMARKS
C2L-D87904
U67 F138
U48 F20
U69 LS139
U57 LS04
U68 LS32
U77 F08
U43 F10
U1 F10
iLA13
iLA14
iLA15
(2E4) USER-N
(2A5) RMME-N
(2B4) UNSTACK-N
(5G4) DMA-N
(2E4) MSCDR-N
(2B5) NOTDEC-N
(1B5) iLA0-P
(1B5) iLA1-P
$0000
$2000
$4000
$6000
$8000
$A000
$C000
$E000
P8-69 ROMSEL-N
P8-2 RAMSEL-N
EMCRSEL-N (1E4)
P8-21 iRQESEL-N
PAGERSEL-N (3D1)(1F5)
P8-22 ULSROSEL-N
P7-40 ULSR1SEL-N
P7-41 ULSR2SEL-N
P7-44 CPUMODE-N
GSTRSEL-N (4E1)(4E2)(1E5)
P7-42 BCMDRSEL-N
R6 1k VP4 (1C4)(2A4)(4C1)
R5 1k VP3 (4B2)(4B2)(4D3),(4B3) (5G1)
R2 1k VP2 (4E2)(4H2)(4B5)(5G2)
R1 1k VP1 (2A1)(3C2)(5C2)
+5V P7-23,27,31,35
+5V P8-23,27,31,35
+5V
0.022μF x40
GND P8-3, 11, 19,39,47,55,59
GND P7-3, 11, 19,39,47,55,59
GND P8-3, 11, 19,23,27,31,35,39
REPRAND-N (2F1)
SCDRCS-N (2A2)(3C2)
CPUCYCL-P (4C3)
P8-37 DMA-N
DMA-N (2B3)(2G2)(4D3)(4F1)(5B3)
HITACHI
COMPANY CONFIDENTIAL
K158
NO RELOCATION ASE DECODE
5
REMARKS
DWN A Takuta 86-01-13
CHKD
APPD
PROJECTION
SCALE NTS
TITLE CIRCT BUFBOX 1
SIZE CODE CLASS
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG NO.
343 3Y0 2908
H180A502


CYCLRES-N P6-44
PERR-N (4E2)
PERR-N P7-48
(2D4) STEPBRK-N
(4G1) WPTDET-N
U44
(5B5) VP3
P8-26 BREAKSET-P
MHALT-N P6-22
ASE-N (2E4)
U12
F00
(1D2) FTINS-N
ATE-N P8-25
U45
F32
AT-N (4F2)
BREAK-N P7-46
U44
(5B5) VP3
MLIR-N P6-21
(5G1) LST-P
U77
F08
(2E4) ASE-N
U46
BREAK-N (4E2)
U76 F04
(5B5) VP4
U58
(2A5) RHME-N
F74
P7-49 STACK-N
(4C4) NMISET1-P
(4B4) RETNINS-N
U74
F02
(5G3) CPUCYCL-P
T2T-N P8-24
F02
F32 U59
U63
(5G2) IFC-N
(5H2) 2"FETCH-P
(5F1) HERDE-N
U59 F32
HEAFC-P (1D1)
(5G4) DMA
(5D5) VP2
(3F1) MHRD-N
(5C5) GSTRSEL-N
U7
LS32
(2C1) MASRES-N
(5C5) GSTRSEL-N
(1B2) MHWR-N
U7
LS32
(4C2) BREAK-N
(4B1) PERR-N
(4B2) AT-N
LS 279
U22
U21 LS08
(5G4) DMA-N
WPTDET-N P6-45
U7
LS32
WPTDET-N (4B1)
U21 LS08
(2C1) MASRES-N
LS 279
U23
(1A1) MRD
(1B2) MMRES-N
(5D3)
(2C4) RUN USER-N
(5D5) VP2
LS74
U6

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	PROV	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

1 ※ 61.6.1ｶ D3 HALT BREAK ｾｲｾﾞ ﾀｲｼｮｳ
2 ※ 61.7.26 D3 ﾊﾞｰｽﾄﾓｰﾄﾞ ﾀｲｼｮｳ ﾀｲｼｮｳ

C2LD 87904

U65 F00
P8-30 → HALTNMI-N
P8-33 → RETNINS-N
RETNINS-N (4C1) (5G2)
(NINS-P)

U75 LS 393 (CLR, CLK, Qa, Qb, Qc, Qd)
U20 F139 (A, B, G, 0, 1, 2, 3)
(5E8SET)
(5F5SET)
(PCLSET)
(PCHSET)

U76 F04
U43 F10
P8-43 → INSERT-P
SHIFTCLK-N (1E5)
(4C1) (4D3)
NMISET1-P
U76 F04
EMCRRES-N (2C1)

U31 F08
U24 F74
RUNOFF-P (2D3)
(RUNOFF-N)
(5D5) ▽P3
(4C4) NMISET1-P
U63 F02
P8-29 → NMISET-N

U76 F04
U77 F08
(5D5) ▽P2
PCLATCH-P (4D5)
U37 F244
↓D0~↓D7-P (1A2)

U36 LS 374
↓LA7 ↓LA6 ↓LA5 ↓LA4 ↓LA3 ↓LA2 ↓LA1 ↓LA0
↓D7 ↓D6 ↓D5 ↓D4 ↓D3 ↓D2 ↓D1 ↓D0

U35 LS 374
↓LA15 ↓LA14 ↓LA13 ↓LA12 ↓LA11 ↓LA10 ↓LA9 ↓LA8
↓D7 ↓D6 ↓D5 ↓D4 ↓D3 ↓D2 ↓D1 ↓D0

PCLATCH-P (4B5)

(1B5) ↓LA0~↓LA15-P

U41 LS 244
↓D0~↓D7-P (1A2)
↓D0 ↓D1 ↓D2 ↓D3 ↓D4 ↓D5 ↓D6 ↓D7

U9 F86
(1B5) ↓LA6-P
U52 F32
(1B5) ↓LA7-P
U74 F02
P8-56 → RELOCATION-P
RELOCATION-P (5C1) (5E1)

U10 LS 175
(5B2) 00-N

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K158

BREAKCONT GSTR 4

REMARKS	DWN	CHKD	APPD	PROJECTION	SCALE	TITLE
	A.Kakuta 86.01.13				NIL	CIRCT BUF BOX 3 ｿﾉ 2

H180A502

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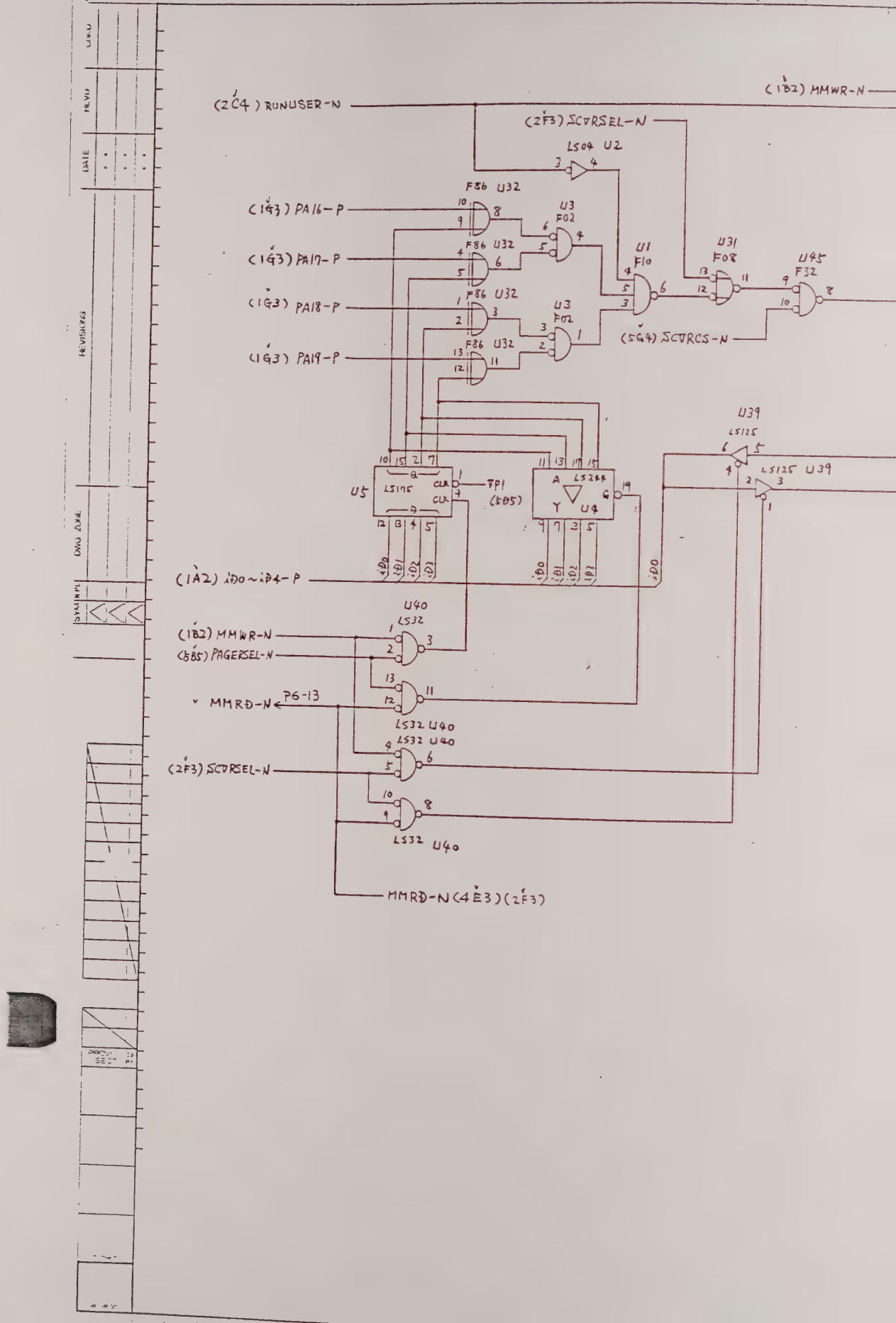
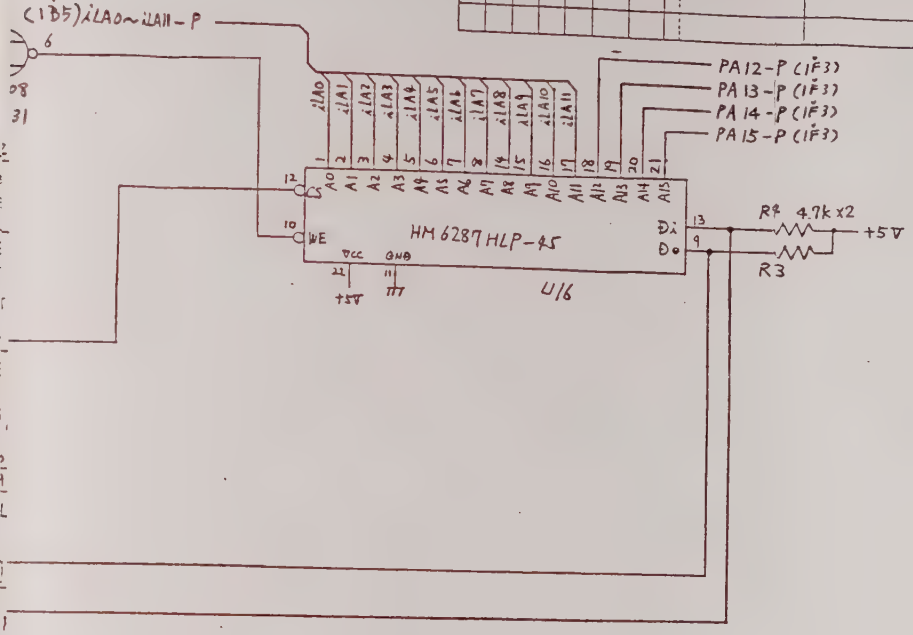
Tokyo Japan

MUSASHI WORKS DWG. NO.
343 3Y029 C8


(2C4) RUNUSER-N
(1B2) MMWR-N
(2F3) SCURSEL-N
LS04 U2
F86 U32
U3 F02
U1 F10
U31 F08
U45 F32
(1G3) PA16-P
(1G3) PA17-P
(1G3) PA18-P
(1G3) PA19-P
(5G4) SCURCS-N
U39 LS125
LS125 U39
U5 LS175
TP1 (5B5)
U4 LS244
(1A2) iD0~iD4-P
U40 LS32
(1B2) MMWR-N
(5B5) PAGERSEL-N
MMRD-N
P6-13
LS32 U40
(2F3) SCURSEL-N
MMRD-N (4E3) (2F3)

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	PROJ.	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD87904



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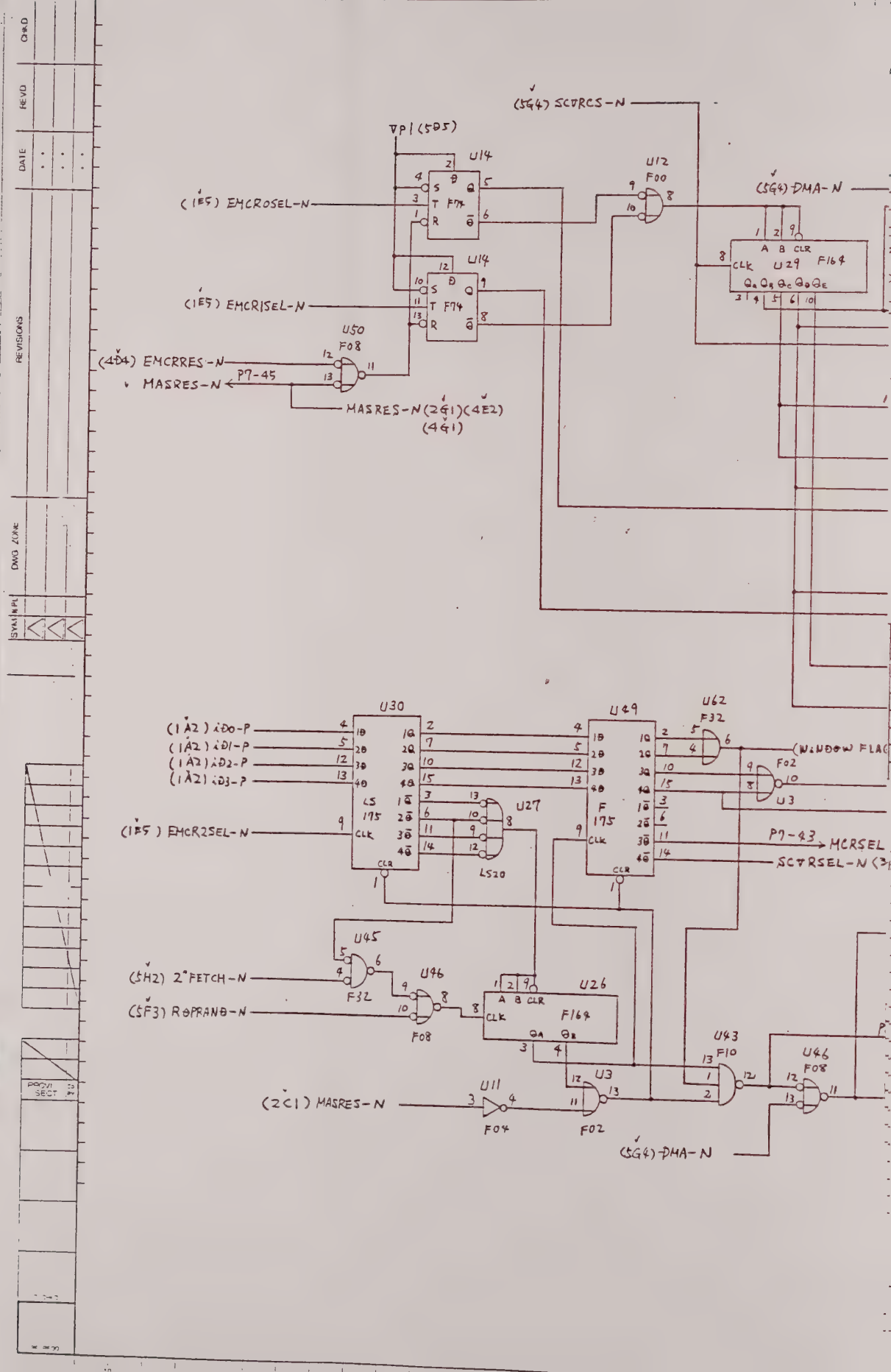
SCOR (3)

REMARKS							
DWN	A.Kikuta	86·01·13	PROJECTION	TITLE	CIRCT BUF Box 回路図		
CHKD							
APPD			SCALE VTS				
				DATE	DD1	CLASS	MATERIAL SPEC
H180A502							

Hitachi, Ltd.
Tokyo Japan

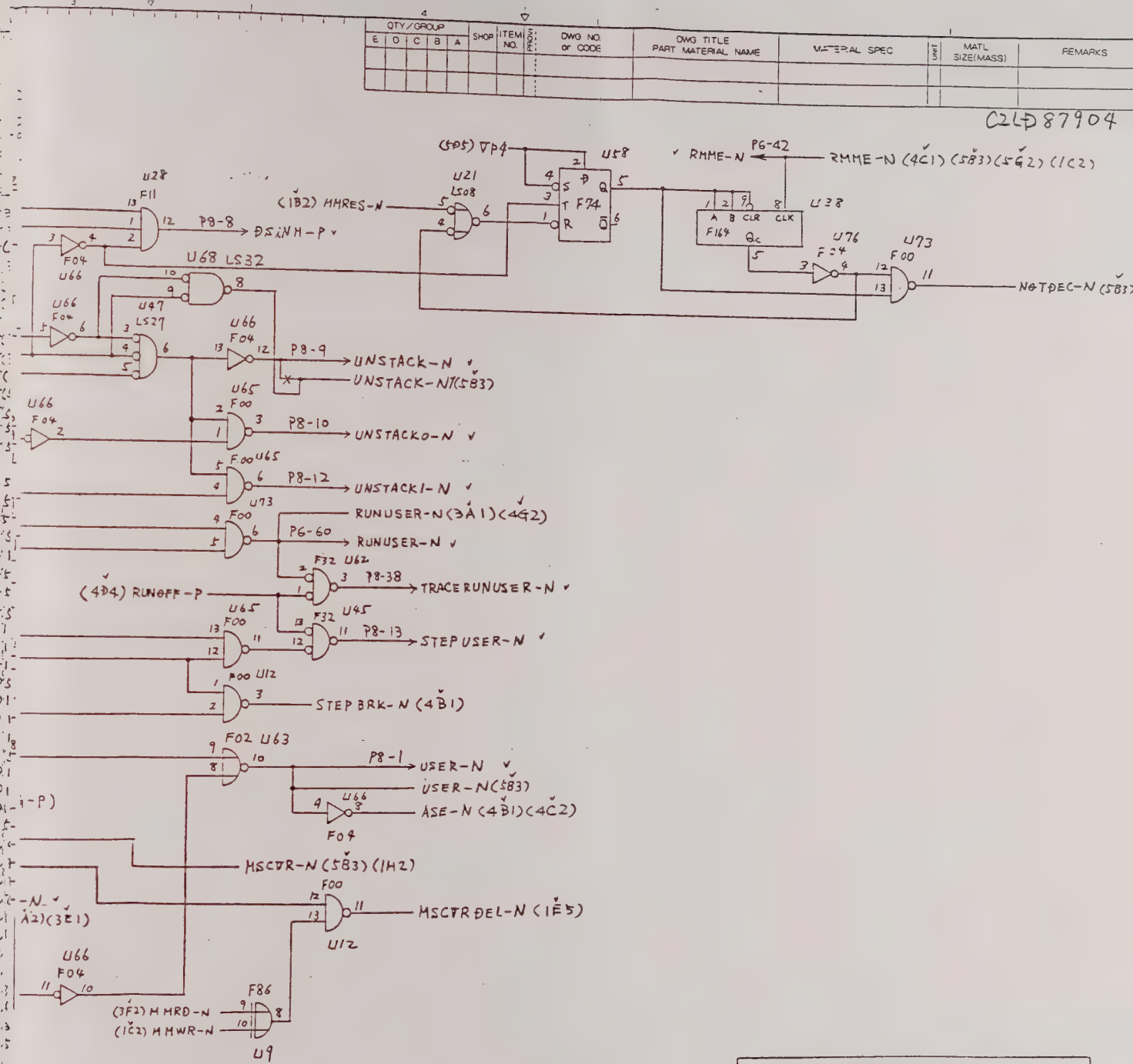
MUSASHI WORKS DWG NO.
343 3 Y 0 2 9 0 8

4


(5G4) SCTRCS-N
TP1 (5D5)
U14
U12
F00
(1E5) EMCROSEL-N
(5G4) DMA-N
U29 F164
U14
(1E5) EMCRISEL-N
U50
F08
(4D4) EMCRRES-N
P7-45
MASRES-N
MASRES-N (2G1) (4E2)
(4G1)
U30
U49
U62
F32
(1A2) ÀD0-P
(1A2) ÀD1-P
(1A2) ÀD2-P
(1A2) ÀD3-P
LS 175
F 175
(WINDOW FLAG
F02
U3
(1E5) EMCR2SEL-N
U27
LS20
P7-43 → MCRSEL
SCTRSEL-N (3
U45
F32
(5H2) 2°FETCH-N
U46
F08
(5F3) RØPRANØ-N
U26
F164
U43
F10
U46
F08
U11
F04
U3
F02
(2C1) MASRES-N
(5G4) DMA-N

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	PROJ.	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD87904



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COMPANY CONFIDENTIAL

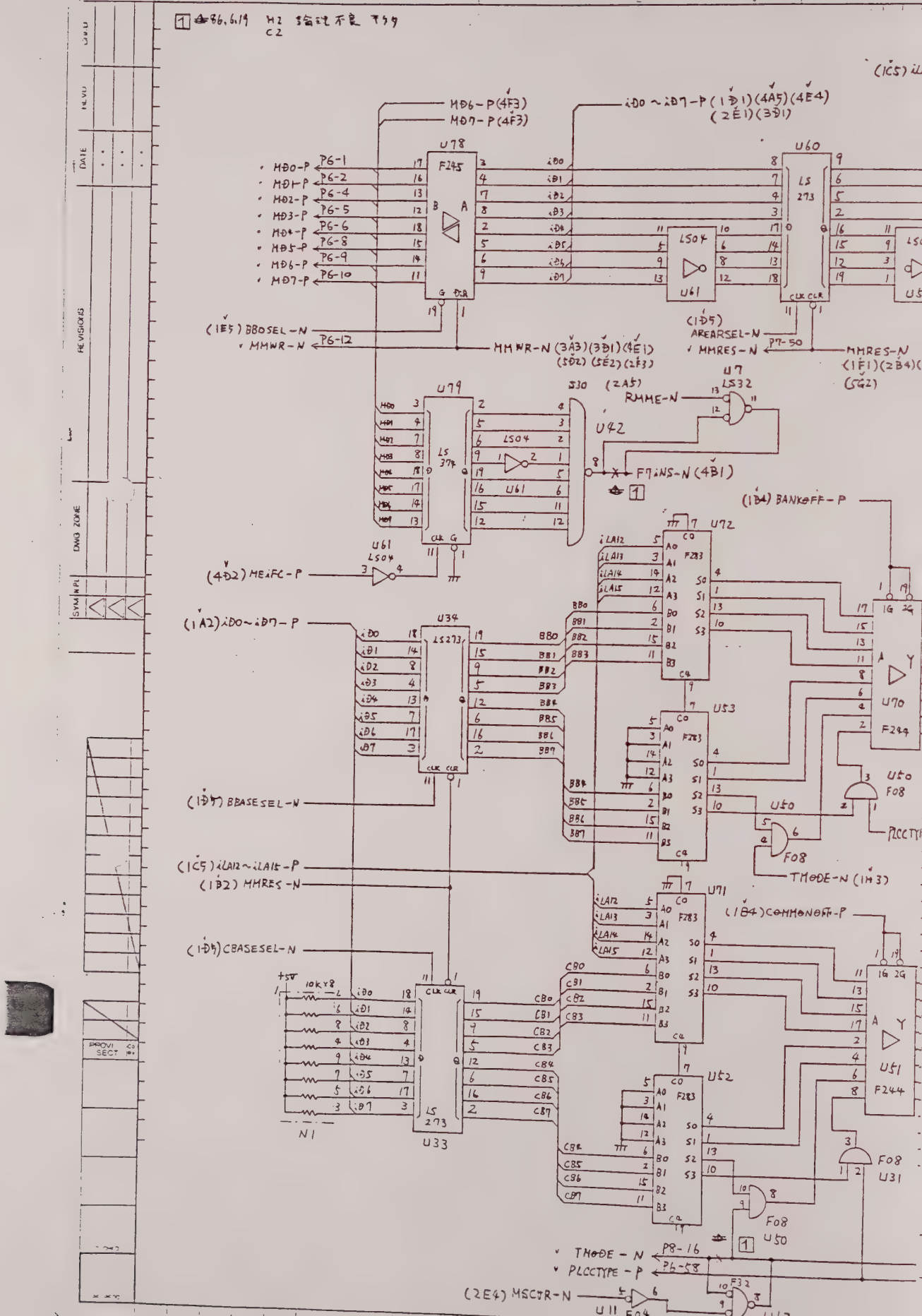
K158

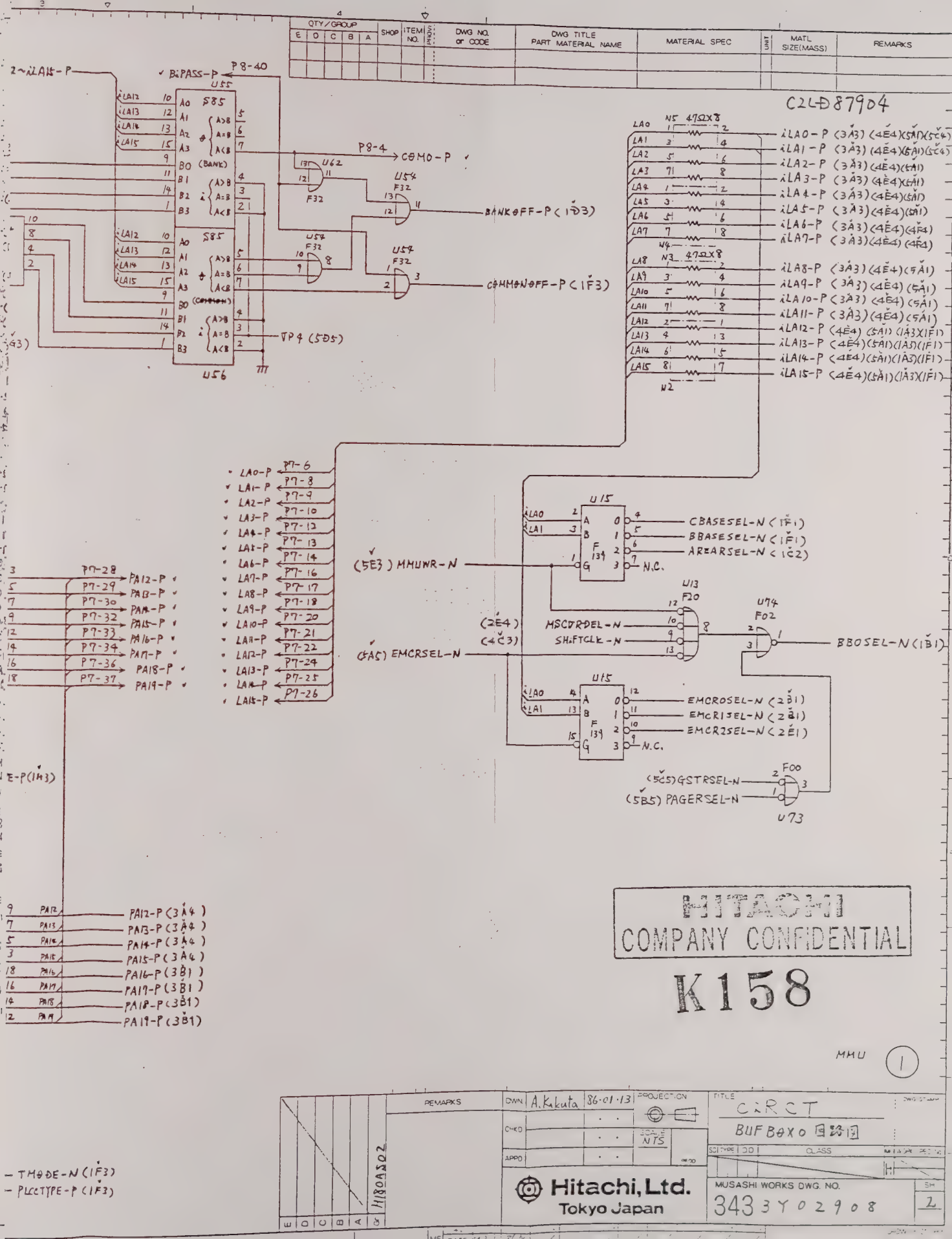
EMCR (2)

REMARKS					
	DWN	A.kakuta	86.01.13	PROJECTION	TITLE CIRCT BUFBOXO
	CHKD				
	APPD			SCALE NTS	CLASS

Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG. NO.
3433Y02908


MD6-P(4F3)
MD7-P(4F3)
iD0~iD7-P(1D1)(4A5)(4E4)(2E1)(3D1)
U78
F245
U60
LS273
U61
LS04
MD0-P
MD1-P
MD2-P
MD3-P
MD4-P
MD5-P
MD6-P
MD7-P
P6-1
P6-2
P6-4
P6-5
P6-6
P6-8
P6-9
P6-10
(1E5) BBOSEL-N
MMWR-N P6-12
MMWR-N (3A3)(3B1)(4E1)(5D2)(5E2)(2F3)
(1D5) AREARSEL-N
MMRES-N P7-50
MMRES-N (1F1)(2B4)(5G2)
U79
LS374
S30
(2A5)
U42
LS32
RMME-N
F7iNS-N (4B1)
(1B4) BANKOFF-P
U72
F283
U61
LS04
(4D2) MEiFC-P
(1A2) iD0~iD7-P
U34
LS273
BB0
BB1
BB2
BB3
BB4
BB5
BB6
BB7
U53
F283
U70
F244
U60
F08
(1D7) BBASESEL-N
(1C5) iLA12~iLA15-P
(1B2) MMRES-N
TMODE-N (1H3)
U71
F283
(1B4) COMMONOFF-P
(1D4) CBASESEL-N
+5V
10KX8
N1
U33
LS273
CB0
CB1
CB2
CB3
CB4
CB5
CB6
CB7
U52
F283
U51
F244
U31
F08
U50
TMODE-N P8-16
PLCCTYPE-P P6-58
(2E4) MSCTR-N
U11
F04
F32


QTY/GROUP
E D C B A
SHOP
ITEM NO.
DWG NO. or CODE
DWG TITLE PART MATERIAL NAME
MATERIAL SPEC
UNIT
MATL SIZE(MASS)
REMARKS
C2LD87904
U55
U56
U62
U54
U15
U13
U74
U73
U2
P8-40
P8-4
C0M0-P
BANK0FF-P (1D3)
CHMM0FF-P (1F3)
TP4 (5D5)
MMUWR-N
CBASESEL-N (1F1)
BBASESEL-N (1F1)
AREARSEL-N (1C2)
N.C.
MSCDRDEL-N
SHIFTCLK-N
BBOSEL-N (1B1)
EMCRSEL-N
EMCR0SEL-N (2B1)
EMCR1SEL-N (2B1)
EMCR2SEL-N (2E1)
GSTRSEL-N
PAGERSEL-N
F00
MMU
1
HITACHI
COMPANY CONFIDENTIAL
K158
CIRCT
BUFBOX
Hitachi, Ltd.
Tokyo Japan
MUSASHI WORKS DWG. NO.
343Y02908
SH 1
A.Kakuta 86-01-13
SCALE NTS
H1804502

P6 CONNECTOR

	MD0-P	1	(1B1)
	MD1-P	2	(1B1)
	GND	3	(5F3)
	MD2-P	4	(1B1)
	MD3-P	5	(1B1)
	MD4-P	6	(1B1)
	N.C.	7	
	MD5-P	8	(1B1)
	MD6-P	9	(1B1)
	MD7-P	10	(1B1)
	GND	11	(5F3)
	MMWR-N	12	(1C1)
	MMRD-N	13	(3E1)
	BME-N	14	(5H1)
	N.C.	15	
	BLOE-N	16	(5D1)
	BREF-N	17	(5F1)
	MC-P	18	
	GND	19	(5F3)
	ME-P	20	
	MLR-N	21	(4B1)
	MHALT-N	22	(4A3)
	+5V	23	(5D3)
	MRTSO-N	24	
	MCTSO-N	25	
	MDCDO-N	26	
	+5V	27	(5D3)
	MTXAO-P	28	
	MRXAO-P	29	
MCKAO/MDMRQO-N		30	
	+5V	31	(5D3)
	MTXA1-P	32	
	MRXA1-P	33	
MCKA1/MTENDO-N		34	
	+5V	35	(5D3)
	MTXS-P	36	
MRXS/MCTSI-N		37	
	MCKS-P	38	
	GND	39	(5F3)
	MDMRQI-N	40	
	MTENDI-N	41	
	RMME-N	42	(2A5)
	INSERT-P	43	(4C3)
	CYCLRES-N	44	(4A1)
	WPTDET-N	45	(4F1)
	PONRES-N	46	
	GND	47	(5F3)
	N.C.	48	
	ROMSEL-N	49	(5A5)
USER BUSEN-N		50	
	ULR-N	51	
TRACE TENDO-N		52	
	SU-N	53	
	MST-P	54	(5H1)
	GND	55	(5F3)
	RELOCATION-P	56	(4F4)
	N.C.	57	
	PLCC TYPE-P	58	(1H2)
	GND	59	(5F3)
	RUNUSER-N	60	(2D4)

	WEXT5-N	1	
	WEXT6-P	2	
	GND	3	
	WEXT7-P	4	
	WEXT8-P	5	
	LA0-P	6	
	N.C.	7	
	LA1-P	8	
	LA2-P	9	
	LA3-P	10	
	GND	11	
	LA4-P	12	
	LA5-P	13	
	LA6-P	14	
	N.C.	15	
	LA7-P	16	
	LA8-P	17	
	LA9-P	18	
	GND	19	
	LA10-P	20	
	LA11-P	21	
	LA12-P	22	
	+5V	23	
	LA13-P	24	
	LA14-P	25	
	LA15-P	26	
	+5V	27	
	PA12-P	28	
	PA13-P	29	
	PA14-P	30	
	+5V	31	
	PA15-P	32	
	PA16-P	33	
	PA17-P	34	
	+5V	35	
	PA18-P	36	
	PA19-P	37	
	TCTLRSTR-N	38	
	GND	39	
	ULSR1SEL-N	40	
	ULSR2SEL-N	41	
	BCMDRSEL-N	42	
	HCRSEL-N	43	
	CPUMODE-N	44	
	MASRES-N	45	
	BREAK-N	46	
	GND	47	
	PERR-N	48	
	STACK-N	49	
	MMRES-N	50	
SUWAITGATE-N		51	
	LHALT-N	52	
	LST-N	53	
	MBUSACK-N	54	
	GND	55	
	UINT2-N	56	
	UINT1-N	57	
	UINT0-N	58	
	GND	59	
	UNMI-N	60	

GND
PWR
DATE
REVISIONS
DWG ZONE
SYM IN PL
MTOFI
MY 1
PROM SECT

QTY/GROUP E	D	C	B	A	SHOP	ITEM NO.	PROVI	DWG NO. or CODE	DWG TITLE PART MATERIAL NAME	MATERIAL SPEC	UNIT	MATL SIZE(MASS)	REMARKS

C2LD 87904

P7 CONNECTOR

(5F3)
(1D4)
(1D4)
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(5B5)
(5B5)
(5C5)
(2E3)
(5C5)
(2C1)
(4B2)
(5F3)
(4A1)
(4C2)
(1B2)
(5G1)
(5F3)
(5F3)

P8 CONNECTOR

USER-N	1	(2E4)
RAMSEL-N	2	(5A5)
GND	3	(5F3)
C0H0-P	4	(1A4)
XAGRD-N	5	
ZSEL-P	6	
N.C.	7	
BSANH-P	8	(2B4)
UNSTACK-N	9	(2B4)
UNSTACKO-N	10	(2C4)
GND	11	(5F3)
UNSTACK1-N	12	(2C4)
STEPUSER-N	13	(2D4)
WAIUSER-N	14	(2E3)
N.C.	15	
THODE-N	16	(1H2)
LUR-N	17	(5G1)
LST-P	18	(5G1)
GND	19	(5F3)
BUWAITGATE-N	20	
XRGESEL-N	21	(5B5)
ULSROSEL-N	22	(5B5)
GND	23	(5F3)
TZT-N	24	(4C1)
ATE-N	25	(4B1)
BREAKSET-P	26	(4B2)
GND	27	(5F3)
PU-N	28	
NMISET-N	29	(4D4)
HALTNMI-N	30	(4B4)
GND	31	(5F3)
WRDL30-N	32	
RETNING-N	33	(4B4)
XACKODMA-N	34	
GND	35	(5F3)
MEMWIND-N	36	(2F3)
DMA-N	37	(5G4)
TRACE RUN USER-N	38	(2B4)
GND	39	(5F3)
BYPASS-P	40	(1A3)

HITACHI
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K158

REMARKS						
E	D	C	B	A	G	
				1136BB20	H180AS02	

DWN	A.Kikuta	86.01.13	PROJECTION
CHKD			SCALE NTS
APPD			

TITLE: CIRCT BUFBOX 用EB1

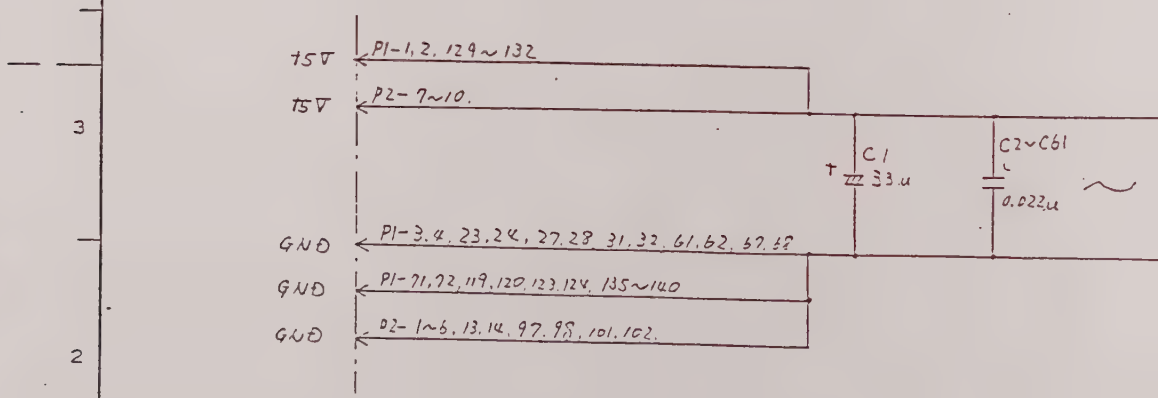
SCALE	DD	CLASS	MATERIAL SPEC
R3A4	3506		H

Hitachi, Ltd.
Tokyo Japan

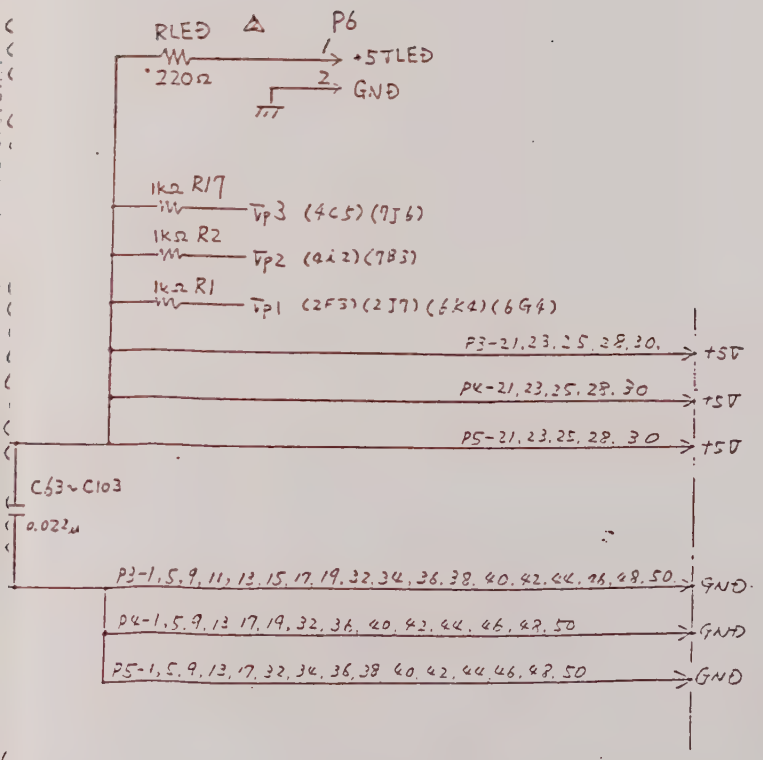
MUSASHI WORKS DWG NO.
3433Y02908

1/6

MF DATE 86.01.13



KES 43109
1A式 HS-A2



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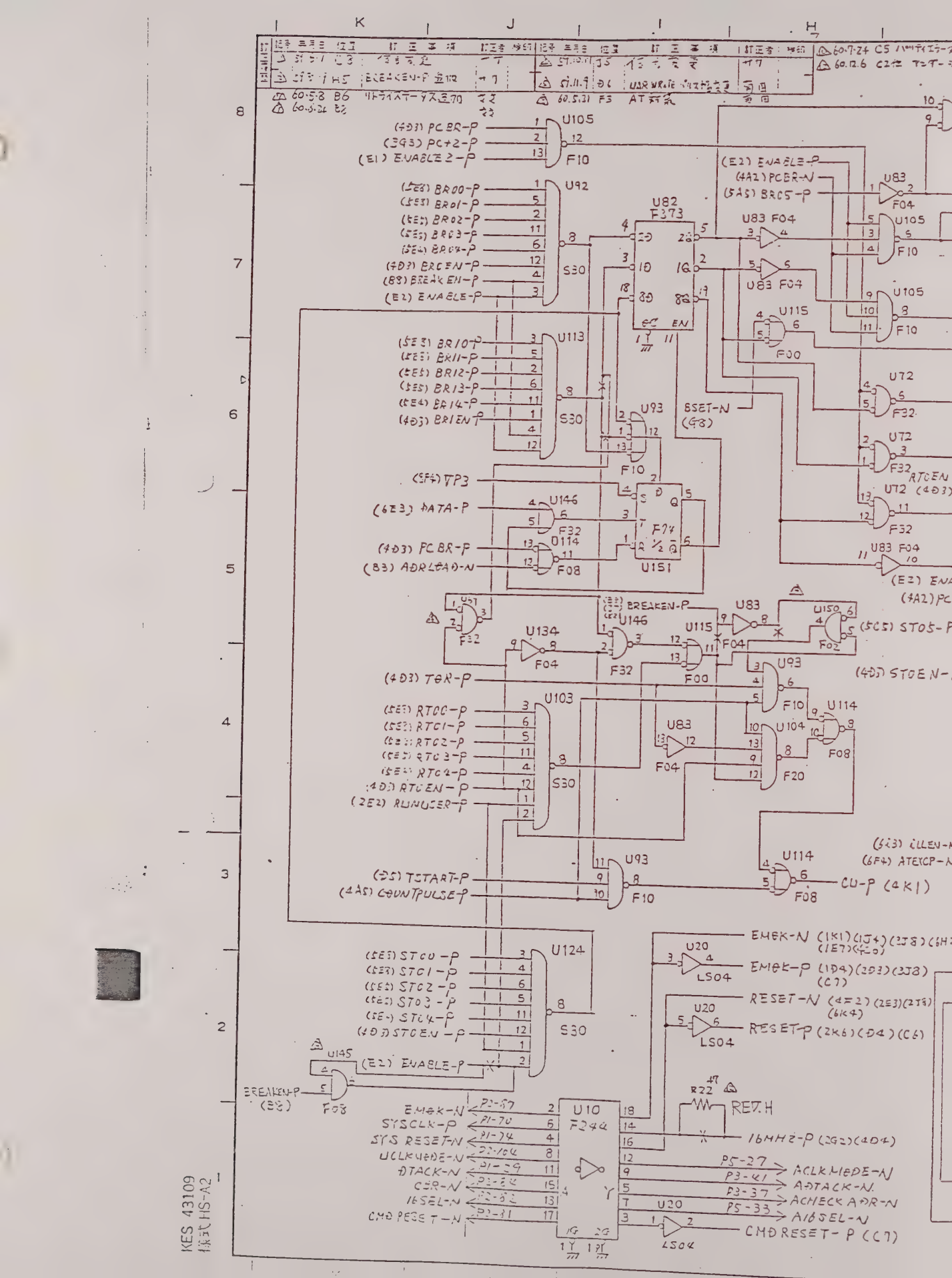
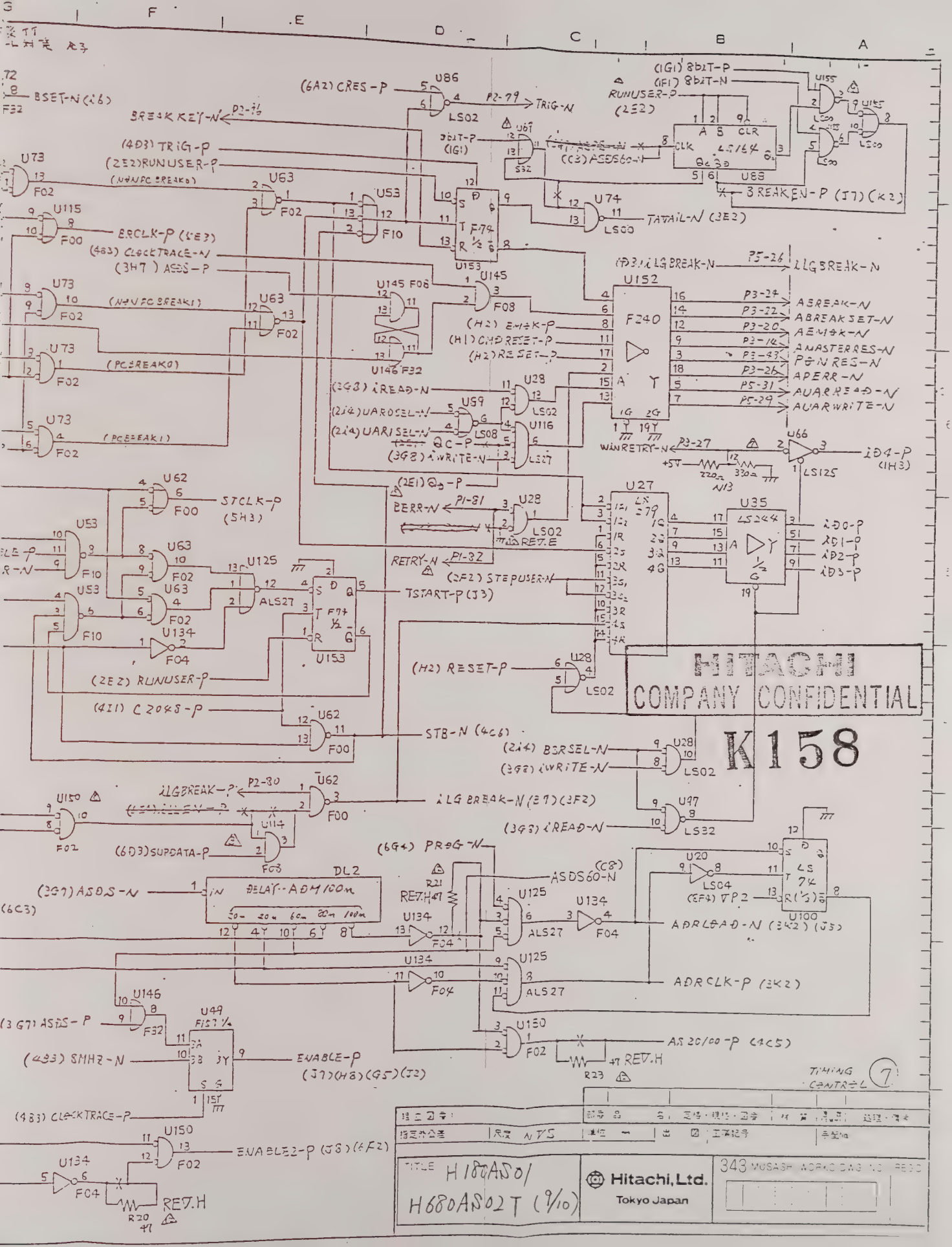
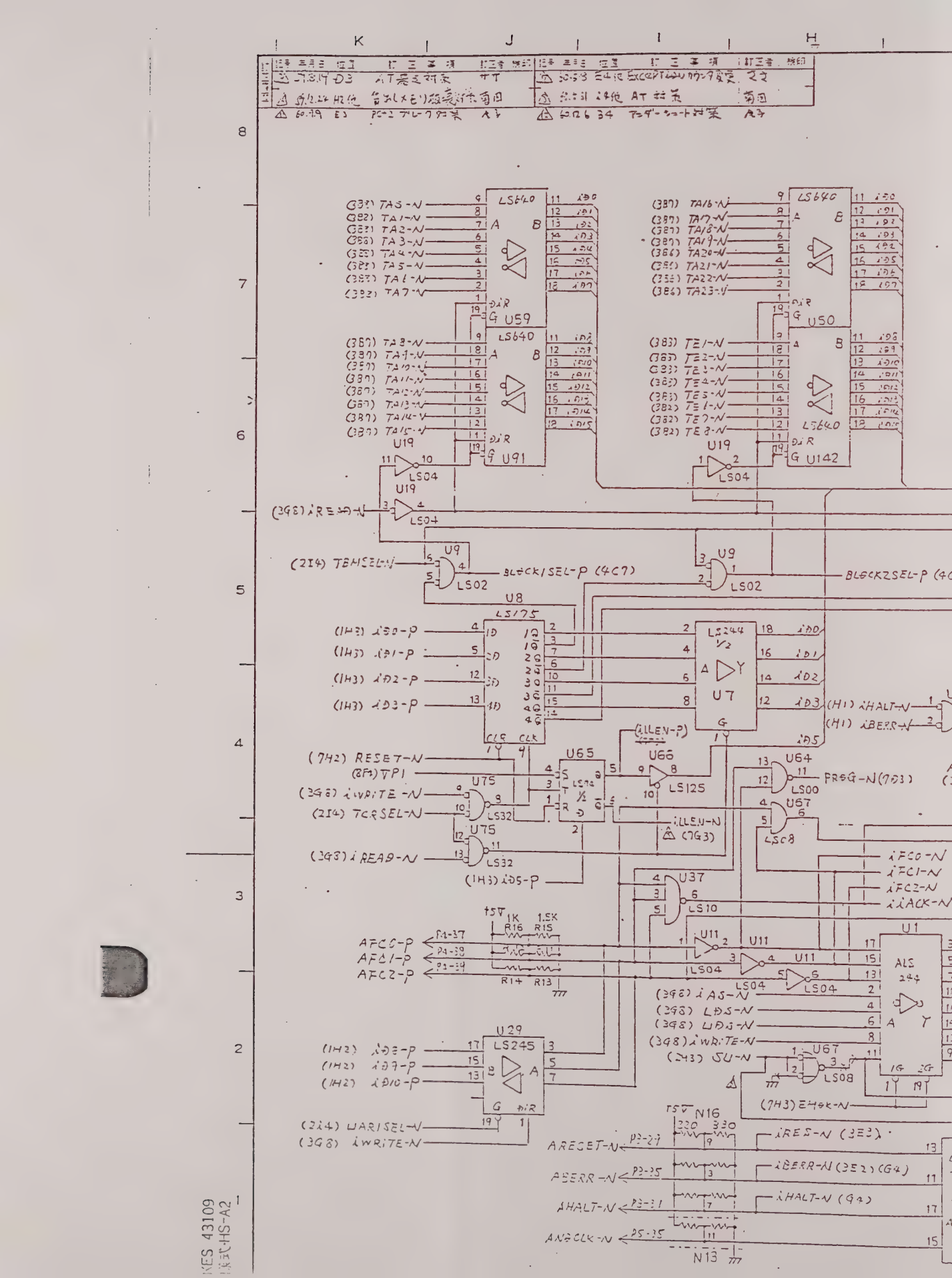
K158

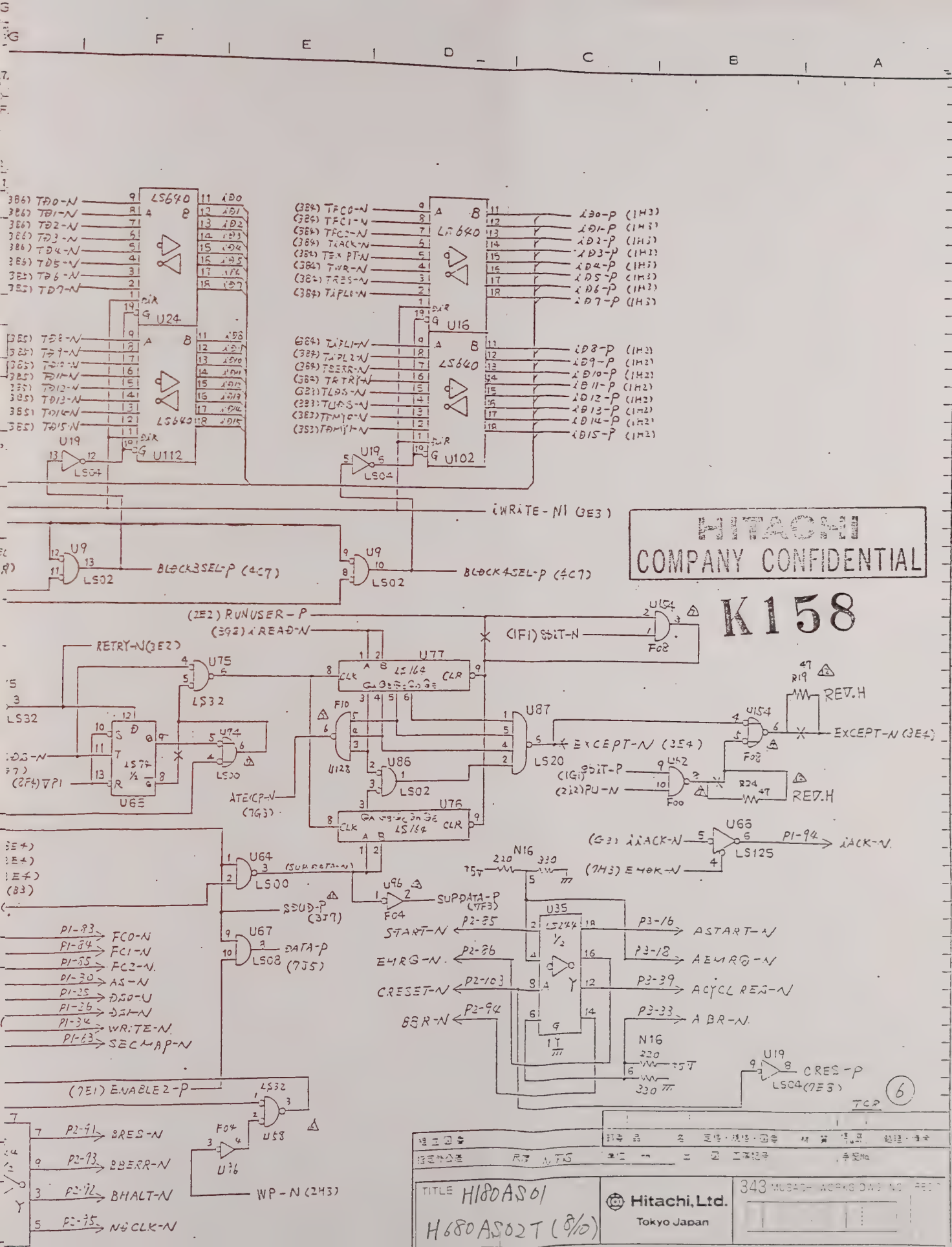
(8)

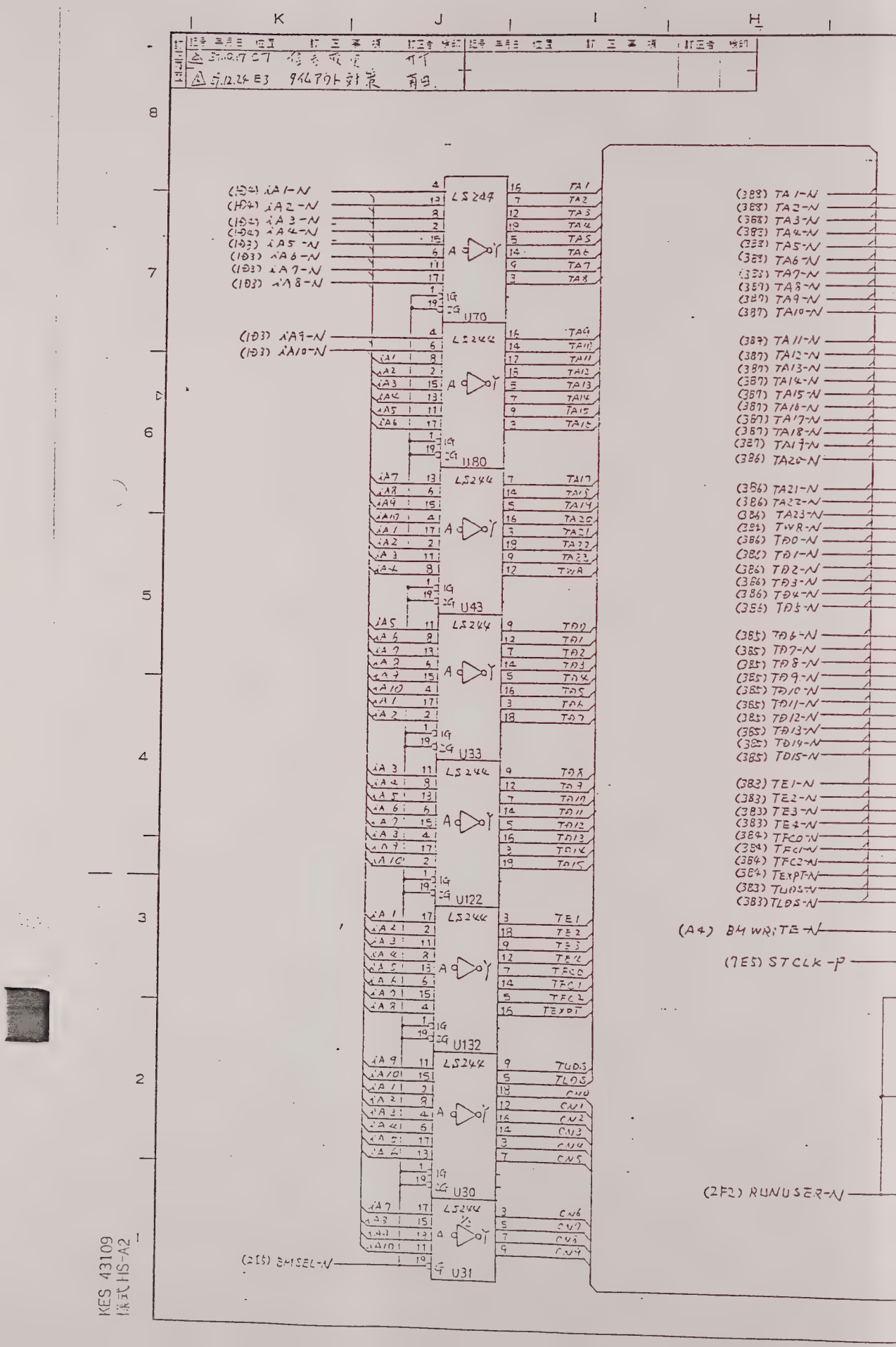
| | | |

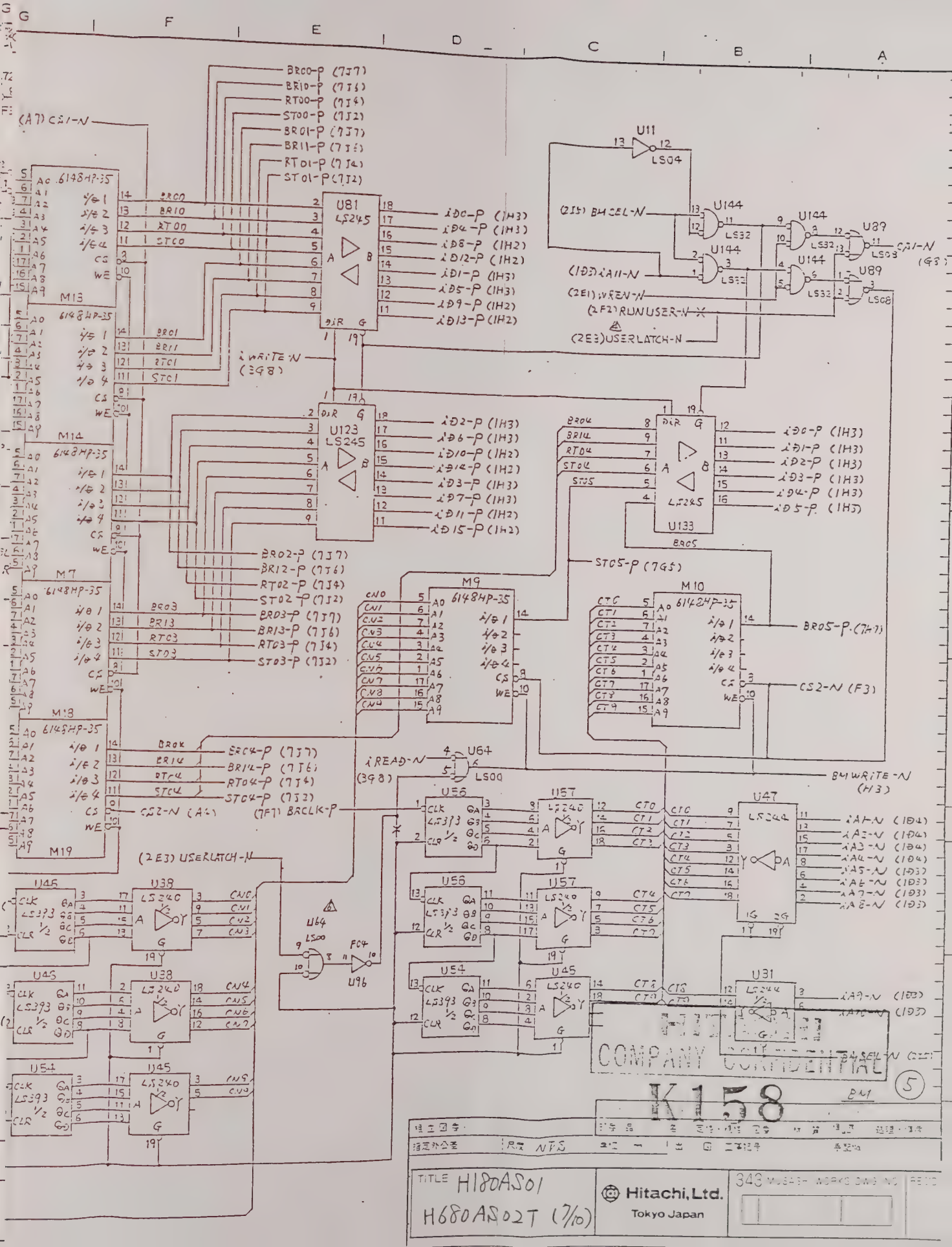

U105
(4D3) PCBR-P
(3G3) PC+2-P
(E1) ENABLE2-P
F10
U92
(5E3) BR00-P
(5E3) BR01-P
(5E5) BR02-P
(5E5) BR03-P
(5E4) BR04-P
(4D3) BRCEN-P
(B3) BREAKEN-P
(E2) ENABLE-P
S30
U82
F373
U83
F04
U115
F00
U113
(5E3) BR10-P
(5E3) BR11-P
(5E5) BR12-P
(5E5) BR13-P
(5E4) BR14-P
(4D3) BRIEN-P
U93
BSET-N
(G3)
U72
F32
RTCEN
(4D3)
(5F4) TP3
(6E3) DATA-P
U146
U114
F08
(4D3) PCBR-P
(B3) ADRLOAD-N
F74
U151
(E2) ENABLE-P
(4A2) PCBR-N
(5A5) BRC5-P
U150
F02
(5C5) STO5-P
(4D3) STOEN-P
(4D3) TBR-P
U134
U103
(5E3) RTC0-P
(5E3) RTC1-P
(5E3) RTC2-P
(5E5) RTC3-P
(5E4) RTC4-P
(4D3) RTCEN-P
(2E2) RUNUSER-P
U104
F20
(5G3) CLLEN-P
(6F4) ATEXCP-P
(5D5) TSTART-P
(4A5) COUNTPULSE-P
CU-P (4K1)
U124
(5E3) STC0-P
(5E3) STC1-P
(5E5) STC2-P
(5E5) STC3-P
(5E4) STC4-P
(4D3) STOEN-P
U145
(E2) ENABLE-P
BREAKEN-P
(B3)
EMGK-N (1K1)(1J4)(2J8)(6H3)(1E7)(4F0)
EMGK-P (1D4)(2D3)(3J8)(C7)
RESET-N (4F2)(2E3)(2J6)(6K4)
RESET-P (2K6)(D4)(C6)
LS04
R22
4T
RED.H
U10
F244
EMGK-N
SYSCLK-P
SYS RESET-N
UCLKMODE-N
ATACK-N
CSR-N
16SEL-N
CMD RESET-N
16MHZ-P (2G2)(4D4)
P5-27 ACLKMODE-N
P3-41 ATACK-N
P3-37 ACHECKADR-N
P5-33 A16SEL-N
CMD RESET-P (C7)
KES 43109
様式 HS-A2

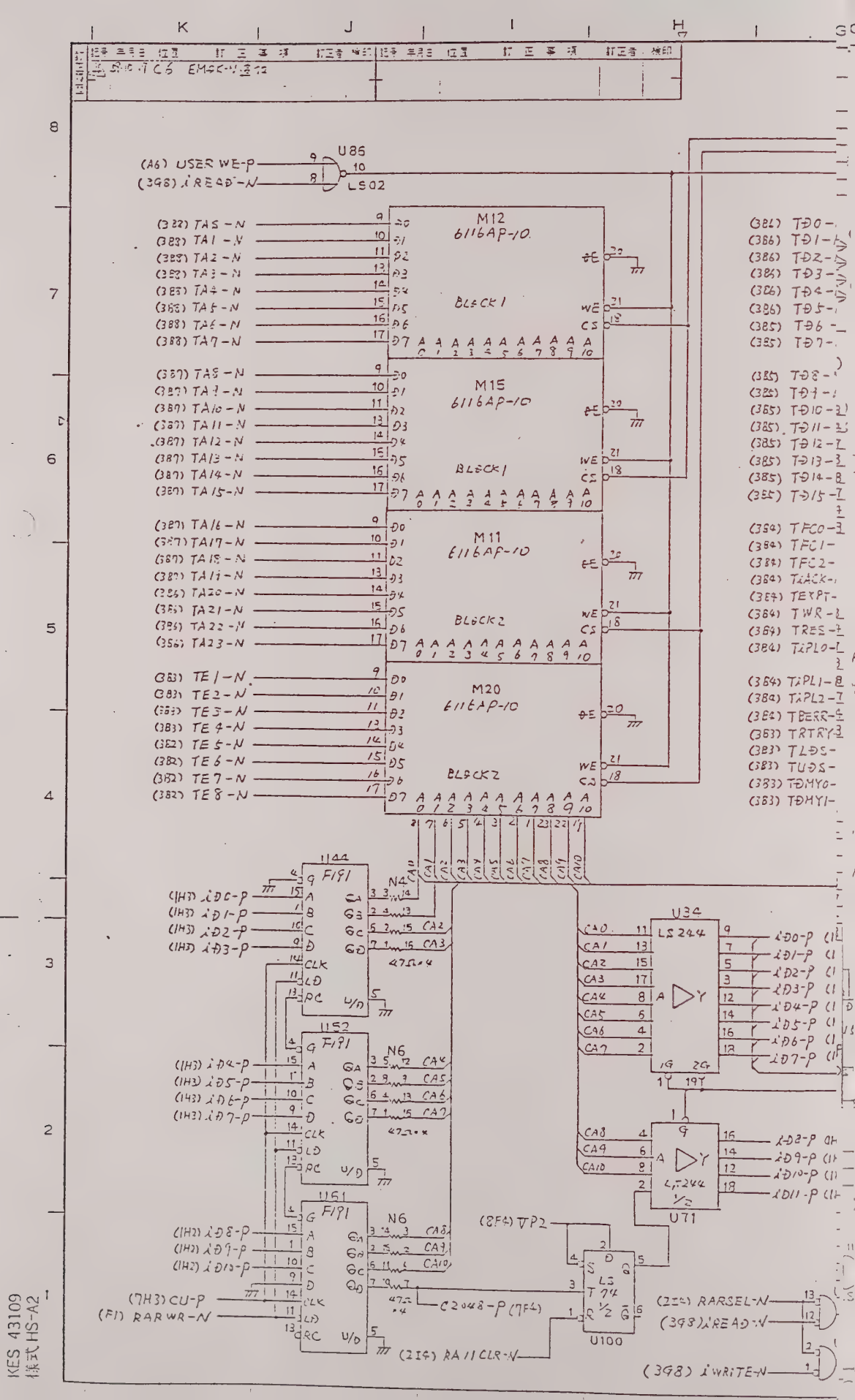

HITACHI
COMPANY CONFIDENTIAL
K158
TIMING CONTROL
7
TITLE H180AS01
H680AS02T (9/10)
Hitachi, Ltd.
Tokyo Japan
343
BSET-N
BREAKKEY-N
TRIG-N
RUNUSER-P
BRCLK-P
CLOCKTRACE-N
ASDS-P
ABREAK-N
ABREAKSET-N
AEMBK-N
AMASTERRES-N
PONRES-N
APERR-N
AUARREAD-N
AUARWRITE-N
LLGBREAK-N
WINRETRY-N
STCLK-P
STB-N
TSTART-P
ADRLOAD-N
ADRCLK-P
ENABLE-P
ENABLE2-P
RETRY-N
BERR-N
RESET-P
SUPDATA-P
ASDS60-N
TAIL-N
U86
U87
U88
U53
U63
U73
U74
U115
U125
U134
U145
U146
U147
U149
U150
U152
U153
U155
U27
U28
U35
U62
U66
U100
U114
DL2
F240
LS279
LS244
ALS27
F74
LS74
LS02
LS04
LS08
LS32
LS86
LS125
F00
F02
F04
F08
F10
F32


U59
U91
U50
U142
U19
LS640
LS04
LS02
U9
U8
LS175
U7
LS244
U65
U66
LS125
U64
LS00
U67
LS08
U75
LS32
U37
LS10
U29
LS245
U1
ALS 244
U11
R16 R15
R14 R13
N16
N13
RESET-N
TBMSEL-N
BLOCK/SEL-P (4C7)
BLOCK2SEL-P (4C
TCRSEL-N
WRITE-N
READ-N
ILLEN-N
FRQG-N(7D3)
AFC0-P
AFC1-P
AFC2-P
ARISEL-N
AS-N
DS-N
UDS-N
SU-N
EMSK-N
ARESET-N
ABERR-N
AHALT-N
ANBCLK-N
HALT-N (9A)
BERR-N (3E2)(G4)
RES-N (3E2)

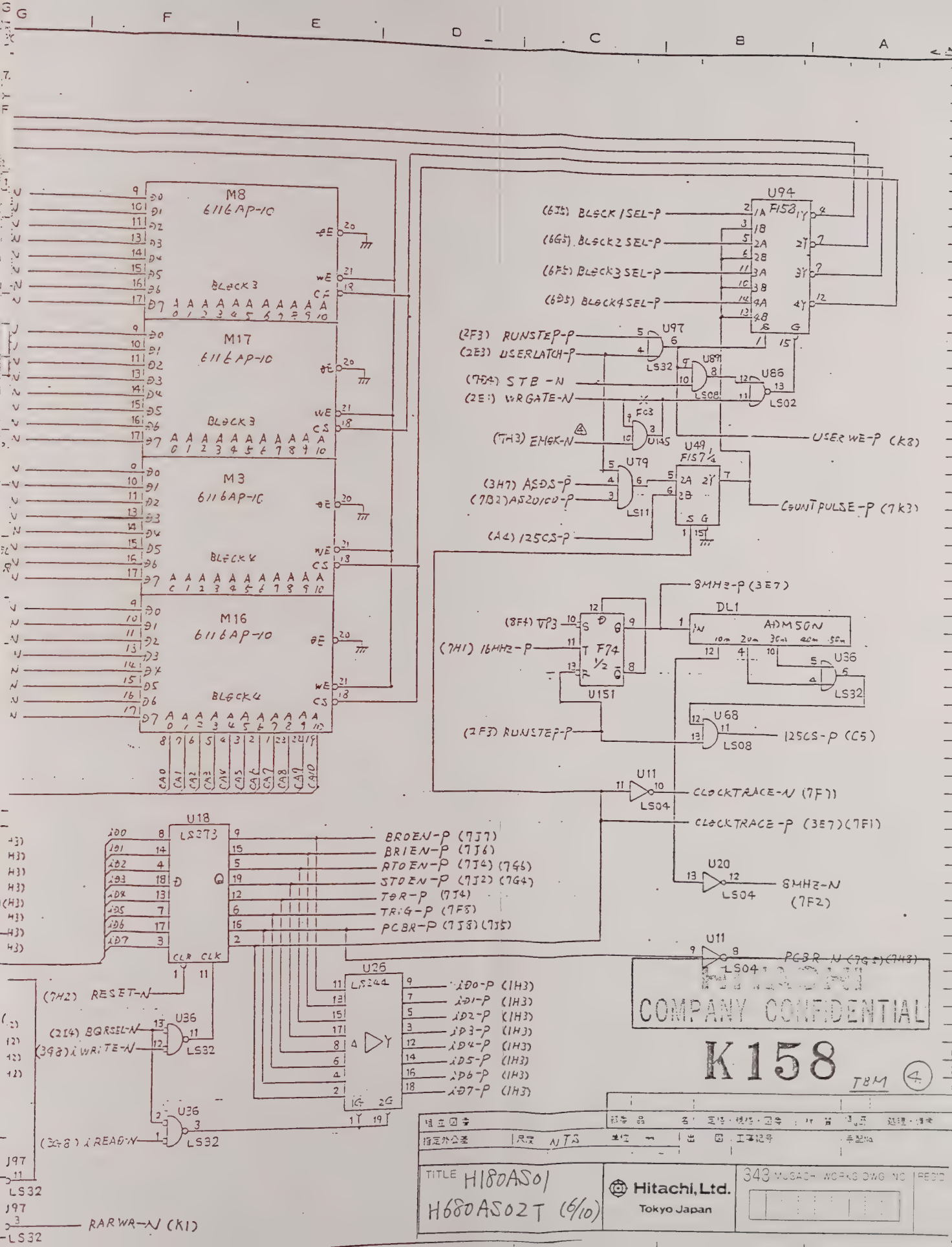

HITACHI
COMPANY CONFIDENTIAL
K158
LS640
U24
U112
U16
U102
U19
LS04
U9
LS02
U154
F08
U77
LS164
U87
LS20
U75
LS32
U74
LS00
U6E
LS74
U86
U76
U64
U67
LS08
U96
F04
U66
LS125
U35
LS244
N16
220
330
U53
U36
(WRITE-N1 (3E3)
BLOCK3SEL-P (4C7)
BLOCK4SEL-P (4C7)
RETRY-N(3E2)
RUNUSER-P
READ-N
EXCEPT-N (3E4)
RED.H
ATECP-N
(7G3)
SUPDATA-P
(7F3)
ENABLE2-P
BRES-N
DBERR-N
BHALT-N
NMICLK-N
WP-N (2H3)
START-N
EMRG-N
CRESET-N
BER-N
ASTART-N
AEMRG-N
ACYCL RES-N
ABR-N
CRES-P
TITLE H180AS01
H680AS02T (8/10)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO.

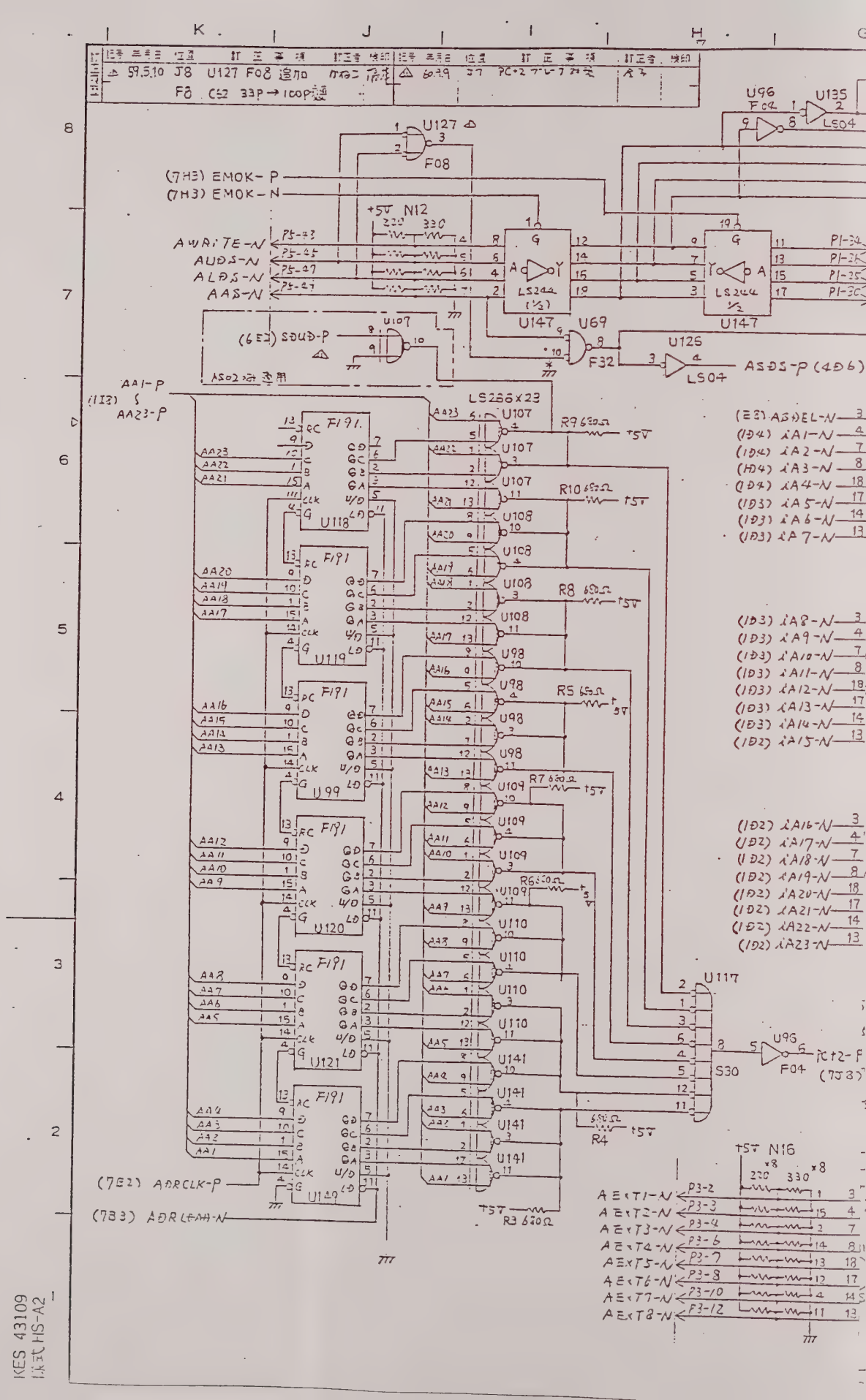

K
J
I
H
8
7
6
5
4
3
2
1
U70
U80
U43
U33
U122
U132
U30
U31
LS244
LS244
LS244
LS244
LS244
LS244
LS244
LS244
(2F2) RUNUSER-N
(7E5) STCLK-P
(A4) B4 WR;TE-N
KES 43109
様式HS-A2


BR00-P (7J7)
BR10-P (7J6)
RT00-P (7J4)
ST00-P (7J2)
BR01-P (7J7)
BR11-P (7J6)
RT01-P (7J4)
ST01-P (7J2)
(A7) CS1-N
M13
M14
M7
M18
M19
U81 LS245
U123 LS245
U133 LS245
U11 LS04
U144 LS32
U89 LS08
(2I5) BHCEL-N
(1G6) IAII-N
(2E1) WREN-N
(2F2) RUNUSER-N
(2E3) USERLATCH-N
iWRITE-N (3G8)
M9
M10
BR02-P (7J7)
BR12-P (7J6)
RT02-P (7J4)
ST02-P (7J2)
BR03-P (7J7)
BR13-P (7J6)
RT03-P (7J4)
ST03-P (7J2)
BR05-P (7H7)
ST05-P (7G5)
CS2-N (F3)
BR04-P (7J7)
BR14-P (7J6)
RT04-P (7J4)
ST04-P (7J2)
CS2-N (A2)
(7F7) BRCLK-P
iREAD-N (3G8)
U64 LS00
U96 F04
U56 LS393
U57 LS240
U45 LS240
U54 LS393
U38 LS240
U47 LS244
U31 LS244
B4 WRITE-N (H3)
B4 SEL-N (C2)
COMPANY CONFIDENTIAL
K158
TITLE H180AS01
H680AS02T (7/10)
Hitachi, Ltd.
Tokyo Japan

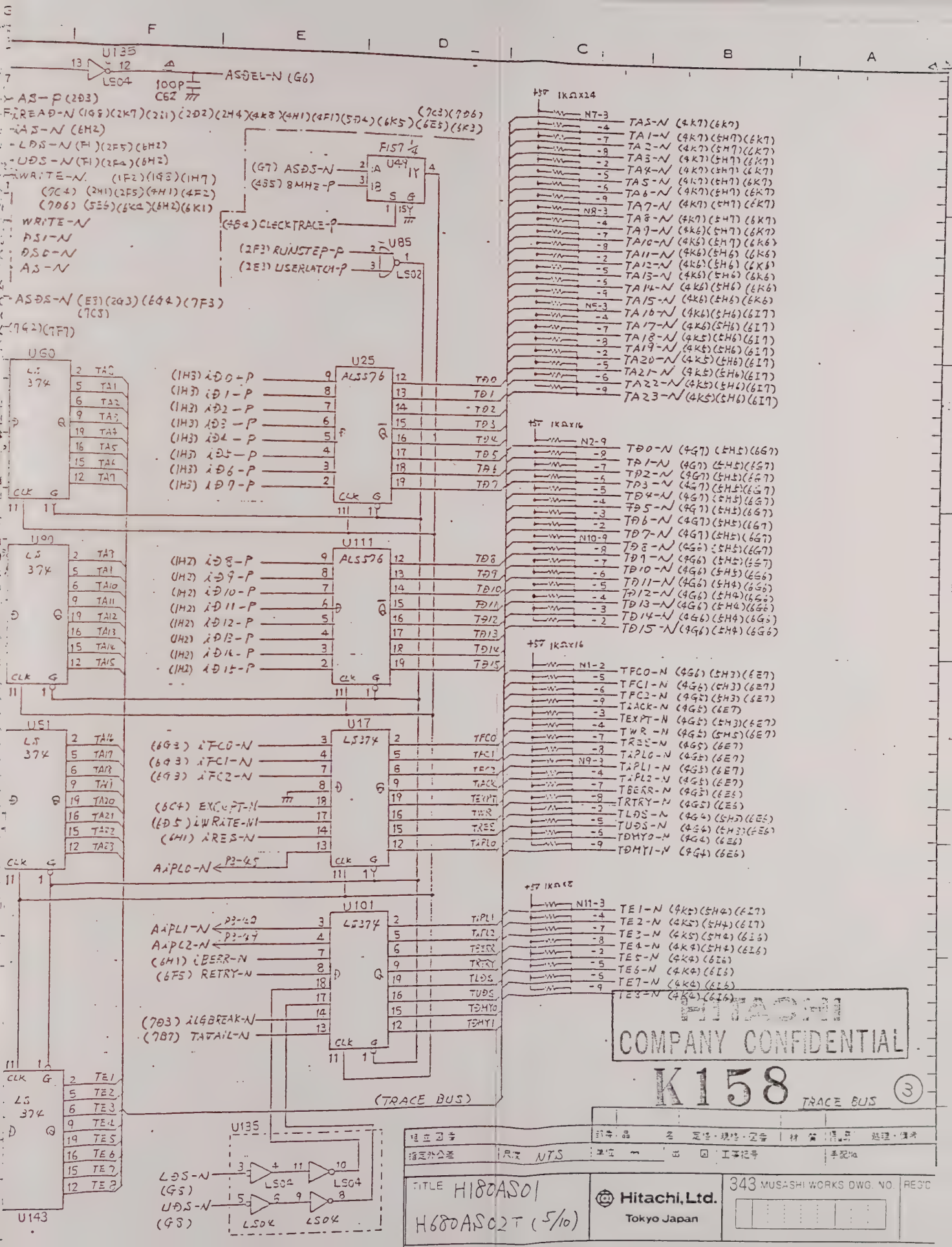


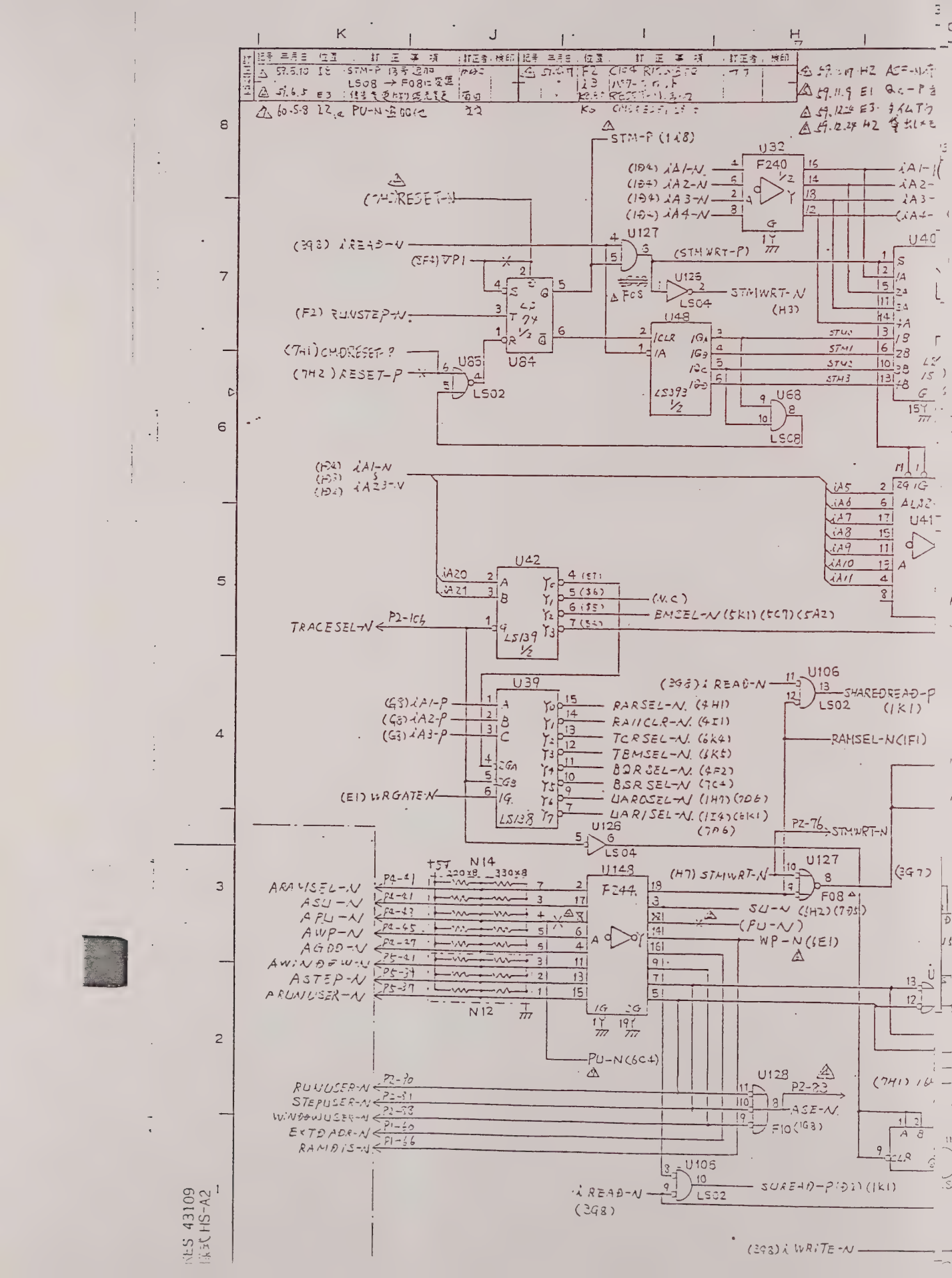
KES 43109
様式 HS-A2

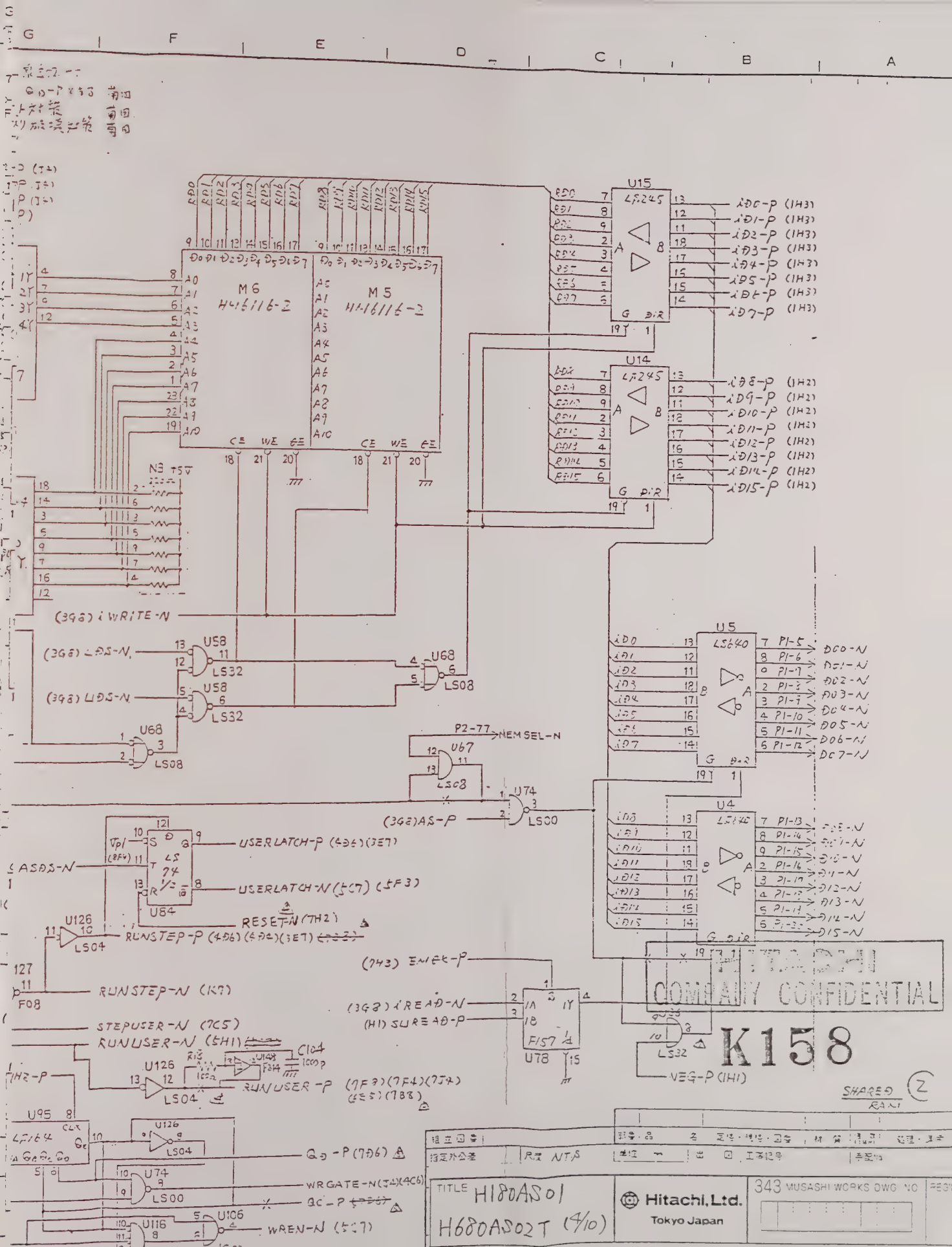

M8 6116AP-10
M17 6116AP-10
M3 6116AP-10
M16 6116AP-10
BLOCK3
BLOCK4
U94 FI58
(6J5) BLOCK1SEL-P
(6G5) BLOCK2SEL-P
(6F5) BLOCK3SEL-P
(6D5) BLOCK4SEL-P
(2F3) RUNSTEP-P
(2E3) USERLATCH-P
(7H4) STB-N
(2E5) WRGATE-N
(7H3) EMGK-N
USER WE-P (K8)
U97 LS32
U89 LS08
U86 LS02
U135
U79 LS11
U49 FIS74
(3H7) ASDS-P
(7B2) AS20/60-P
(A4) 125CS-P
COUNT PULSE-P (7K3)
8MHz-P (3E7)
DL1 AM50N
(8F4) VP3
(7H1) 16MHz-P
F74 1/2
U151
U36 LS32
U68 LS08
(2F3) RUNSTEP-P
125CS-P (C5)
U11 LS04
CLOCKTRACE-N (7F1)
CLOCKTRACE-P (3E7)(7F1)
U20 LS04
8MHz-N (7F2)
U18 LS273
BRDEN-P (7J7)
BRIEN-P (7J6)
RTOEN-P (7J4) (7G6)
STOEN-P (7J2) (7G4)
TOR-P (7J4)
TRIG-P (7F5)
PCBR-P (7J8) (7J5)
U26 LS244
(7H2) RESET-N
(2H4) BGRSEL-N
(3G8) WRITE-N
(3G8) READ-N
RARWR-N (K1)
COMPANY CONFIDENTIAL
K158
TBM
TITLE H180AS01 H680AS02T (6/10)
Hitachi, Ltd.
Tokyo Japan

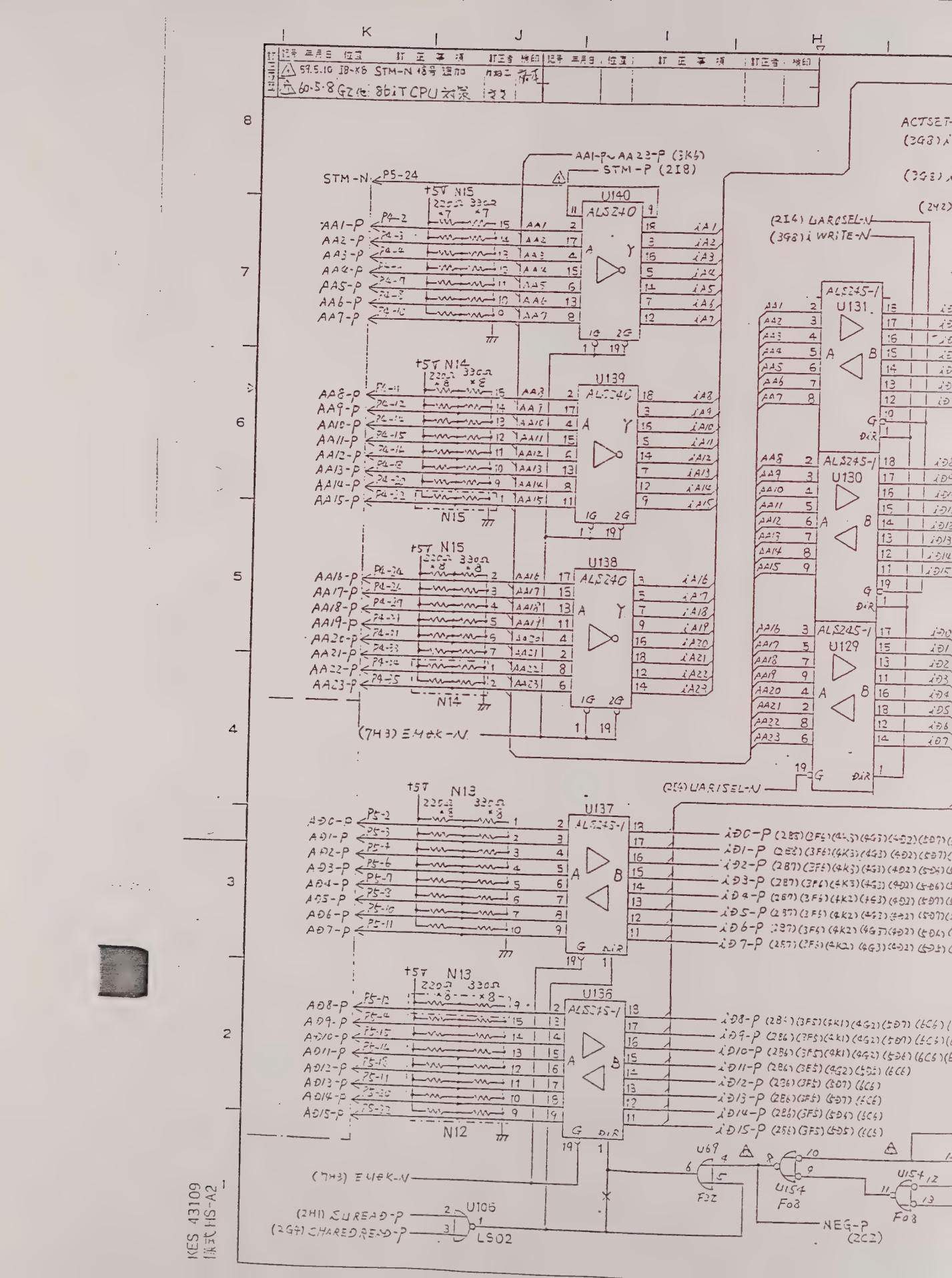


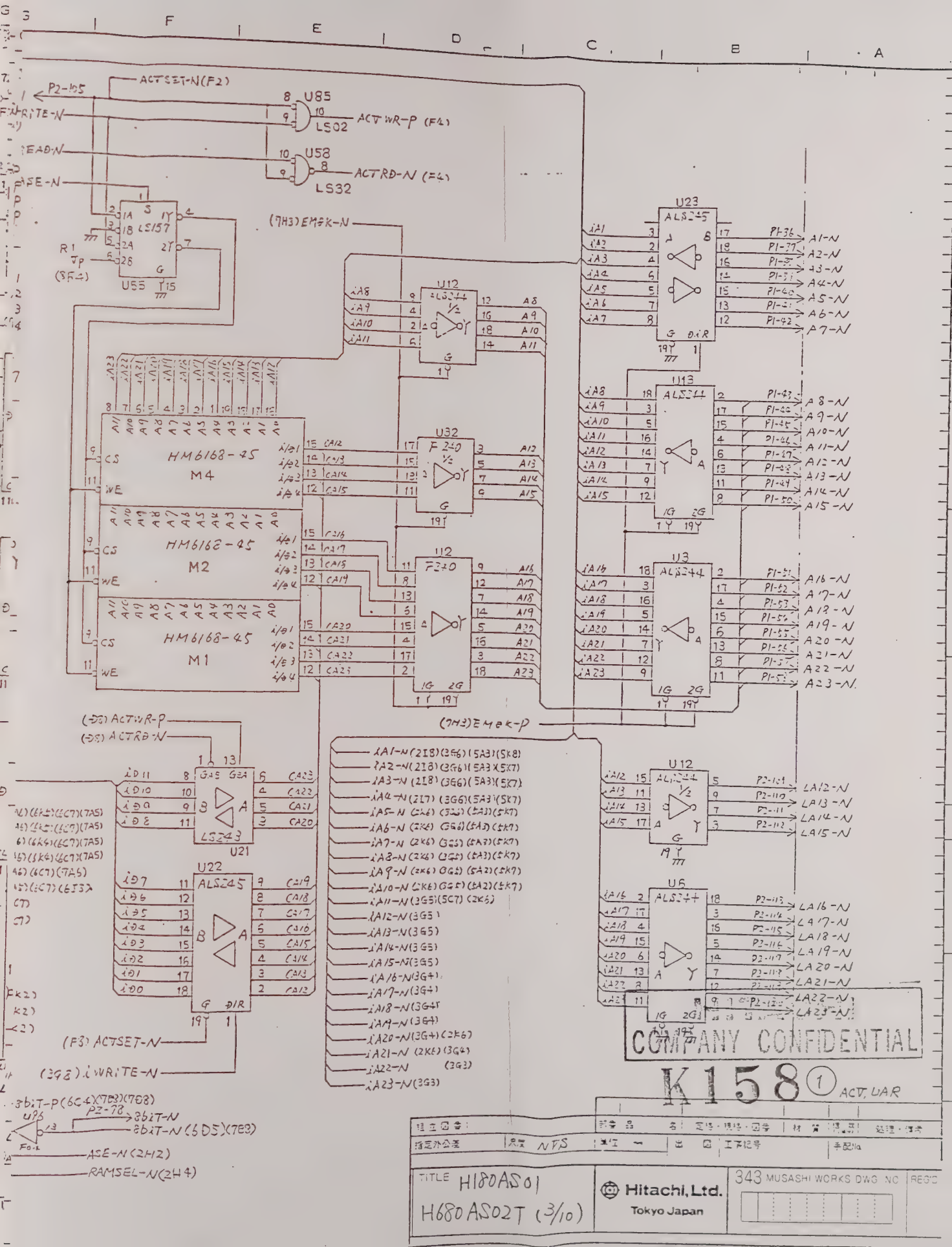
KES 43109
KIT HS-A2

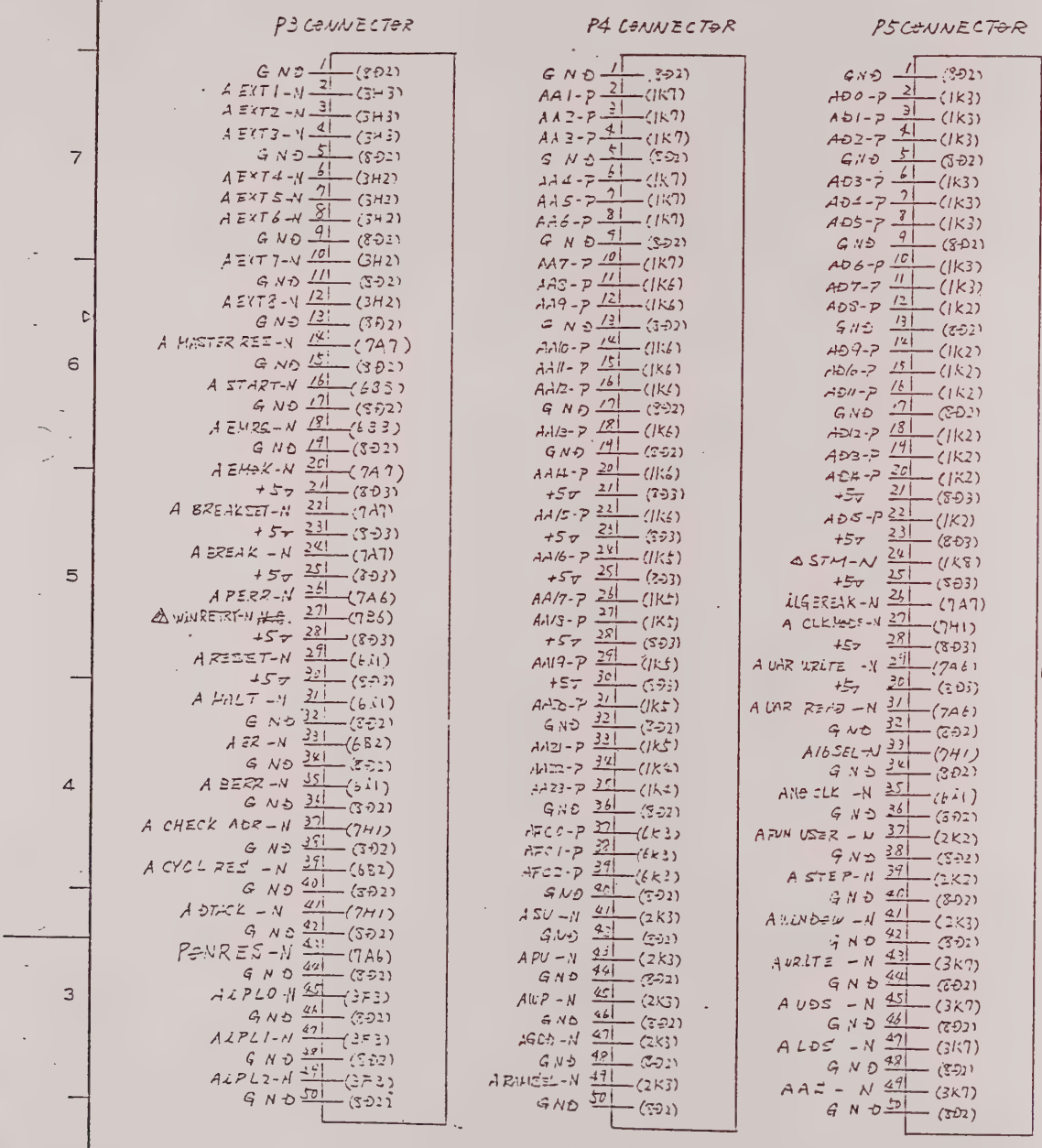

U135
LS04
100P
C62
ASDEL-N (G6)
AS-P (2D3)
FREAD-N (1G8)(2K7)(2J1)(2D2)(2H4)(4K8)(4H1)(4F1)(5D4)(6K5)(7C3)(7D6)(6E5)(5K3)
AS-N (6H2)
LDS-N (FI)(2E5)(6H2)
UDS-N (FI)(2E4)(6H2)
WRITE-N (1F2)(1G8)(1H7)
(7C4) (2H1)(2F5)(4H1)(4E2)
(7D6) (5E5)(5K4)(6H2)(6K1)
WRITE-N
DS1-N
DSO-N
AS-N
ASDS-N (E3)(2G3)(6G4)(7F3)
(7C3)
(7G2)(7F7)
F157 1/4
U49
(G7) ASDS-N
(4G5) 8MHz-P
(4G4) CLECKTRACE-P
U85
LS02
(2F3) RUNSTEP-P
(2E3) USERLATCH-P
U60
LS 374
U25
ALS576
(1H3) XD0-P
(1H3) XD1-P
(1H3) XD2-P
(1H3) XD3-P
(1H3) XD4-P
(1H3) XD5-P
(1H3) XD6-P
(1H3) XD7-P
TD0
TD1
TD2
TD3
TD4
TD5
TD6
TD7
U90
U111
(1H2) XD8-P
(1H2) XD9-P
(1H2) XD10-P
(1H2) XD11-P
(1H2) XD12-P
(1H2) XD13-P
(1H2) XD14-P
(1H2) XD15-P
TD8
TD9
TD10
TD11
TD12
TD13
TD14
TD15
U51
U17
LS374
(6G3) XTFC0-N
(6G3) XTFC1-N
(6G3) XTFC2-N
(6C4) EXCEPT-N
(6D5) XWRITE-N
(6H1) XRES-N
A2PL0-N
P3-45
TFC0
TFC1
TFC2
TACK
TEXPT
TWR
TRES
TAPL0
U101
A2PL1-N
P3-40
A2PL2-N
P3-47
(6H1) XBERR-N
(6F5) RETRY-N
(7D3) XLGBREAK-N
(7B7) TATAIL-N
TAPL1
TAPL2
TBERR
TRTRY
TLDS
TUDS
TDMY0
TDMY1
U143
LS 374
TE1
TE2
TE3
TE4
TE5
TE6
TE7
TE8
(TRACE BUS)
U135
LDS-N (G5)
UDS-N (G5)
LS04
+5V 1KΩx14
N7-3
TA5-N (4K7)(6K7)
TA1-N (4K7)(5H7)(6K7)
TA2-N (4K7)(5H7)(6K7)
TA3-N (4K7)(5H7)(6K7)
TA4-N (4K7)(5H7)(6K7)
TA5-N (4K7)(5H7)(6K7)
TA6-N (4K7)(5H7)(6K7)
TA7-N (4K7)(5H7)(6K7)
N8-3
TA8-N (4K7)(5H7)(6K7)
TA9-N (4K6)(5H7)(6K7)
TA10-N (4K6)(5H7)(6K6)
TA11-N (4K6)(5H6)(6K6)
TA12-N (4K6)(5H6)(6K6)
TA13-N (4K6)(5H6)(6K6)
TA14-N (4K6)(5H6)(6K6)
TA15-N (4K6)(5H6)(6K6)
N5-3
TA16-N (4K6)(5H6)(6I7)
TA17-N (4K6)(5H6)(6I7)
TA18-N (4K5)(5H6)(6I7)
TA19-N (4K5)(5H6)(6I7)
TA20-N (4K5)(5H6)(6I7)
TA21-N (4K5)(5H6)(6I7)
TA22-N (4K5)(5H6)(6I7)
TA23-N (4K5)(5H6)(6I7)
+5V 1KΩx16
N2-9
TD0-N (4G7)(5H5)(6G7)
TD1-N (4G7)(5H5)(6G7)
TD2-N (4G7)(5H5)(6G7)
TD3-N (4G7)(5H5)(6G7)
TD4-N (4G7)(5H5)(6G7)
TD5-N (4G7)(5H5)(6G7)
TD6-N (4G7)(5H5)(6G7)
TD7-N (4G7)(5H5)(6G7)
N10-9
TD8-N (4G6)(5H5)(6G7)
TD9-N (4G6)(5H5)(6E7)
TD10-N (4G6)(5H5)(6G6)
TD11-N (4G6)(5H4)(6G6)
TD12-N (4G6)(5H4)(6G6)
TD13-N (4G6)(5H4)(6G6)
TD14-N (4G6)(5H4)(6G6)
TD15-N (4G6)(5H4)(6G6)
+5V 1KΩx16
N1-2
TFC0-N (4G6)(5H3)(6E7)
TFC1-N (4G6)(5H3)(6E7)
TFC2-N (4G5)(5H3)(6E7)
TACK-N (4G5)(6E7)
TEXPT-N (4G5)(5H3)(6E7)
TWR-N (4G5)(5H5)(6E7)
TRES-N (4G5)(6E7)
TAPL0-N (4G5)(6E7)
N9-3
TAPL1-N (4G5)(6E7)
TAPL2-N (4G5)(6E7)
TBERR-N (4G5)(6E5)
TRTRY-N (4G5)(6E5)
TLDS-N (4G4)(5H5)(6E5)
TUDS-N (4G4)(5H3)(6E5)
TDMY0-N (4G4)(6E6)
TDMY1-N (4G4)(6E6)
+5V 1KΩx8
N11-3
TE1-N (4K5)(5H4)(6I7)
TE2-N (4K5)(5H4)(6I7)
TE3-N (4K5)(5H4)(6I6)
TE4-N (4K4)(5H4)(6I6)
TE5-N (4K4)(6I6)
TE6-N (4K4)(6I6)
TE7-N (4K4)(6I6)
TE8-N (4K4)(6I6)
HITACHI
COMPANY CONFIDENTIAL
K158
TRACE BUS
3
TITLE H180AS01
H680AS02T (5/10)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG. NO.
REV'D


STM-P (1A8)
U32
F240
(7H1) RESET-N
(3G8) iREAD-N
(5F4) TP1
U127
(STM WRT-P)
U40
U126
LS04
STM WRT-N (H3)
(F2) RUNSTEP-N
U84
LS74
(7H1) CM-RESET-P
(7H2) RESET-P
U85
LS02
U148
LS393
U68
LS08
(1D4) iA1-N
(1B4) iA2-N
(1D4) iA3-N
(1D3) iA4-N
iA1-P
iA2-P
iA3-P
U41
LS29
U42
LS139
TRACESEL-N
P2-16
BMSEL-N (5K1) (5C7) (5A2)
U39
LS138
RARSEL-N. (4H1)
RAIICLR-N. (4E1)
TCRSEL-N. (6K4)
TBMSEL-N. (6K5)
BQRSEL-N. (4F2)
BSRSEL-N (7C4)
UARQSEL-N (1H1) (7D6)
UARISEL-N. (1E4) (6K1) (7D6)
(E1) WRGATE-N
(3G6) iREAD-N
U106
LS02
SHAREDREAD-P (1K1)
RAMSEL-N (1F1)
PZ-76
STM WRT-N
U127
F08
(H7) STM WRT-N
(3G7)
SU-N (7H2) (7D5)
(FU-N)
WP-N (5E1)
F244
N14
220x8
330x8
ARAMISEL-N
ASU-N
APU-N
AWP-N
AGDD-N
AWINDOW-N
ASTEP-N
ARUNUSER-N
N12
PU-N (6C4)
U128
F10
RUNUSER-N
STEPUSER-N
WINDOWUSER-N
EXTDADR-N
RAMDIS-N
ASE-N
(7H1)
U105
iREAD-N
(3G8)
SUREAD-P (1G1) (1K1)
(3G8) iWRITE-N

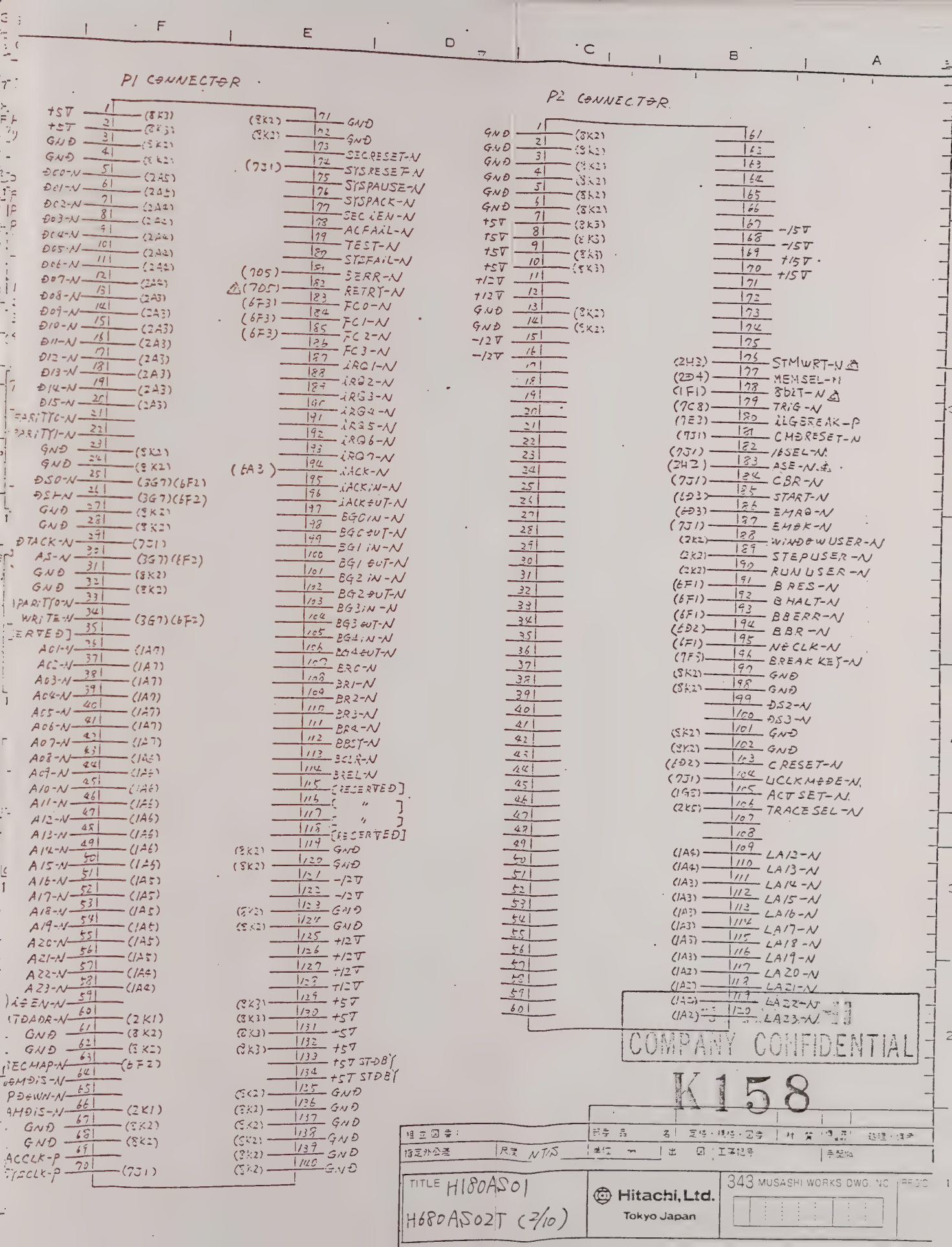

M6 HM6116-2
M5 HM6116-2
U15 LS245
U14 LS245
U5 LS640
U4 LS640
U58 LS32
U68 LS08
U67 LS08
U74 LS00
U84 LS74
U126 LS04
U78 F157
U95 LS164
U106 LS32
U116 LS04
(3G6) WRITE-N
(3G6) CAS-N
(3G6) UDS-N
(3G6) LDS-N
P2-77 MEMSEL-N
(3G2) AS-P
USERLATCH-P (4D6)(3ET)
USERLATCH-N (5C7) (5F3)
RESET-N (7H2)
RUNSTEP-P (4D6)(4D2)(3ET)
RUNSTEP-N (K7)
STEPUSER-N (7C5)
RUNUSER-N (5H1)
RUNUSER-P (7F3)(7F4)(7J4) (6E5)(7B8)
(7H3) ENBL-P
(3G8) READ-N
(H1) SUREAD-P
VEG-P (1H1)
WRGATE-N (3J4)(4C6)
WREN-N (5C7)
COMPANY CONFIDENTIAL
K158
SHARED
TITLE H180AS01
H680AS02T (4/10)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO


STM-N
P5-24
AAI-P～AA23-P (3K5)
STM-P (2I8)
U140
ALS240
U139
U138
N15
N14
N13
N12
U131
U130
U129
U137
U136
ALS245-1
(2I4) UARSEL-N
(3G8) WRITE-N
(7H3) EMEK-N
U69
U154
F32
F08
U106
LS02
(2H1) SUREAD-P
(2G4) CHAREREQ-P
NEG-P
(2C2)
KES 43109
様式 HS-A2


ACTSET-N(F2)
P2-105
WRITE-N
READ-N
BASE-N
U85
LS02
ACTWR-P (F4)
U58
LS32
ACTRD-N (F4)
U55
LS157
R1
(3F4)
(7H3) EMSK-N
U23
ALS245
PI-36
PI-37
PI-38
PI-39
PI-40
PI-41
PI-42
A1-N
A2-N
A3-N
A4-N
A5-N
A6-N
A7-N
U12
ALS244
U13
PI-43
PI-44
PI-45
PI-46
PI-47
PI-48
PI-49
PI-50
A8-N
A9-N
A10-N
A11-N
A12-N
A13-N
A14-N
A15-N
U32
F240
HM6168-45
M4
M2
M1
CS
WE
U3
PI-51
PI-52
PI-53
PI-54
PI-55
PI-56
PI-57
PI-58
A16-N
A17-N
A18-N
A19-N
A20-N
A21-N
A22-N
A23-N
(7H3) EMSK-P
(F3) ACTWR-P
(F3) ACTRD-N
LS243
U21
U22
ALS245
(F3) ACTSET-N
(3G8) WRITE-N
8bit-P(6C4X7B3)(7B8)
P2-78
8bit-N
8bit-N (6D5)(7B3)
BASE-N(2H2)
RAMSEL-N(2H4)
LA1-N(2J8)(3G6)(5A3)(5K8)
LA2-N(2J8)(3G6)(5A3)(5K7)
LA3-N (2J8) (3G6) (5A3)(5K7)
LA4-N (2J7) (3G6)(5A3)(5K7)
LA5-N (2K6) (3G6)(5A3)(5K7)
LA6-N (2K6) (3G6)(5A3)(5K7)
LA7-N (2K6) (3G5) (5A3)(5K7)
LA8-N (2K6) (3G5) (5A3)(5K7)
LA9-N (2K6) (3G5) (5A3)(5K7)
LA10-N (2K6) (3G5) (5A3)(5K7)
LA11-N (3G5)(5C7) (2K6)
LA12-N(3G5)
LA13-N(3G5)
LA14-N(3G5)
LA15-N(3G5)
LA16-N(3G4)
LA17-N(3G4)
LA18-N(3G4)
LA19-N(3G4)
LA20-N(3G4)(2K6)
LA21-N (2K6)(3G4)
LA22-N (3G3)
LA23-N(3G3)
U12
U6
P2-104
P2-110
P2-111
P2-112
P2-113
P2-114
P2-115
P2-116
P2-117
LA12-N
LA13-N
LA14-N
LA15-N
LA16-N
LA17-N
LA18-N
LA19-N
LA20-N
LA21-N
LA22-N
LA23-N
COMPANY CONFIDENTIAL
K158 (1) ACT, DAR
TITLE H180AS01
H680AS02T (3/10)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO
REGD



KES 43109
INT HS-A2


P1 CONNECTOR
P2 CONNECTOR
COMPANY CONFIDENTIAL
K158
TITLE H180AS01
H680AS02T (2/10)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG. NO

H.680 A.SOZ TRA

LOGIC

来歴表

記号	年月日	位置	訂正事項	訂正者	検印
△	59.5.10	1-JB-K8	STM-N 追加	かねこ	藤本
	59.5.10	2-J8	STM-P 信号追加		
		2-J7	LSC8 → FC8に変更		
	59.5.10	3-J8	U127 F08 追加		
		3-F8	C62 33P → 100P変更		
	59.5.15	0-H5	STM-N 追加.	かねこ	
△	59.6.1	7-C8	信号変更	中村	藤本
△	59.6.5	2E3	信号変更により 位元変更	角田	藤本
△	59.8.17	6D3	AT最適対策	〃	〃
〃	〃	7H5	BREAKEN-P追加	〃	〃
△	59.10.17	2F2	C104, R18 ↓ 追加.	〃	〃
〃	〃	2J3	パターンカット	〃	〃
〃	〃	2G3,2E3	RESET-N 追加	〃	〃
〃	〃	2K5	CMDRESET 追加	〃	〃
〃	〃	4C6	EMBK-N 追加	〃	〃
〃	〃	5C7	信号変更	〃	〃
〃	〃	7J5	信号変更	〃	〃
〃	〃	2H7	ASE-U 布線追加	〃	〃
△	59.11.9	2E1	UARWRITE パルス幅変更	角田	〃
〃	〃	7D6	〃	〃	〃
△	59.12.24	2E3	タイムアウト対策	〃	〃
〃	〃	5E3	〃	〃	〃
〃	〃	2H2	書あしメモリ破壊対策	〃	〃
〃	〃	6H2	〃	〃	〃
△	60.5.8	1G2	8bitCPU対策	〃	〃
〃	〃	2I2	PU-N追加他	〃	〃
〃	〃	6E4	EXCEPTION カウンタ変更他	〃	〃
〃	〃	7B6	リトライステータス追加	〃	〃
△	60.5.31	6A4			
〃	〃	6B4			
〃	〃	7H4			
△	60.6.24	7C4			
△	60.7.24	7C4			
△	60.9.9	3C4			
△	60.12.6	6C4			
〃	〃	7C4			
〃	〃	7H4			

KES 43109
様式 HS-A2

F E D C B A

CE BOARD

CIRCUIT

訂正事項	訂正者	捺印
AT対策	角田	
〃	〃	
〃	〃	
パリティエラー対策	笹	
TC-2 ブレーク対策 (A502に適用)	庄子	
アンダーシュート対策		
〃		
〃		
〃		

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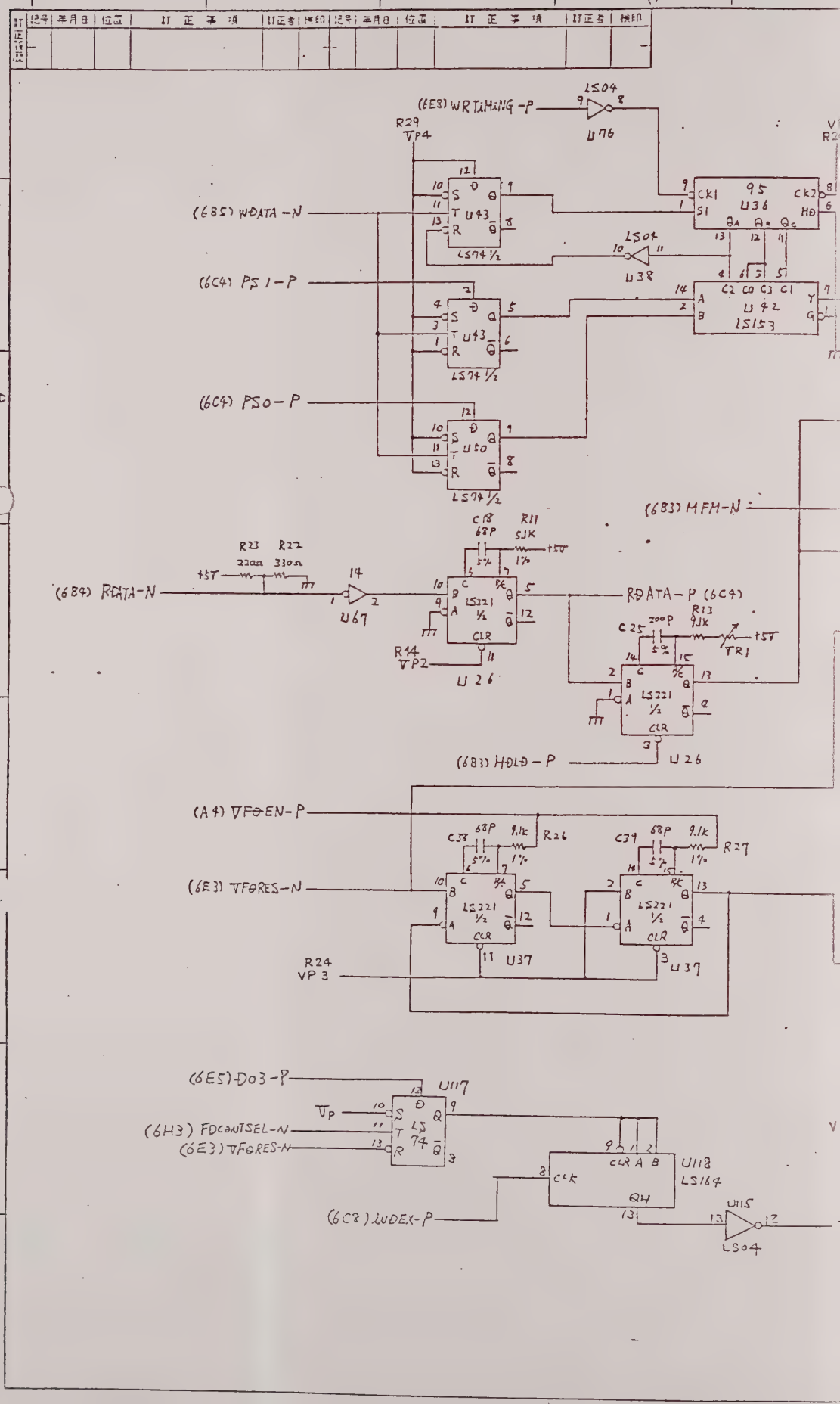
K158

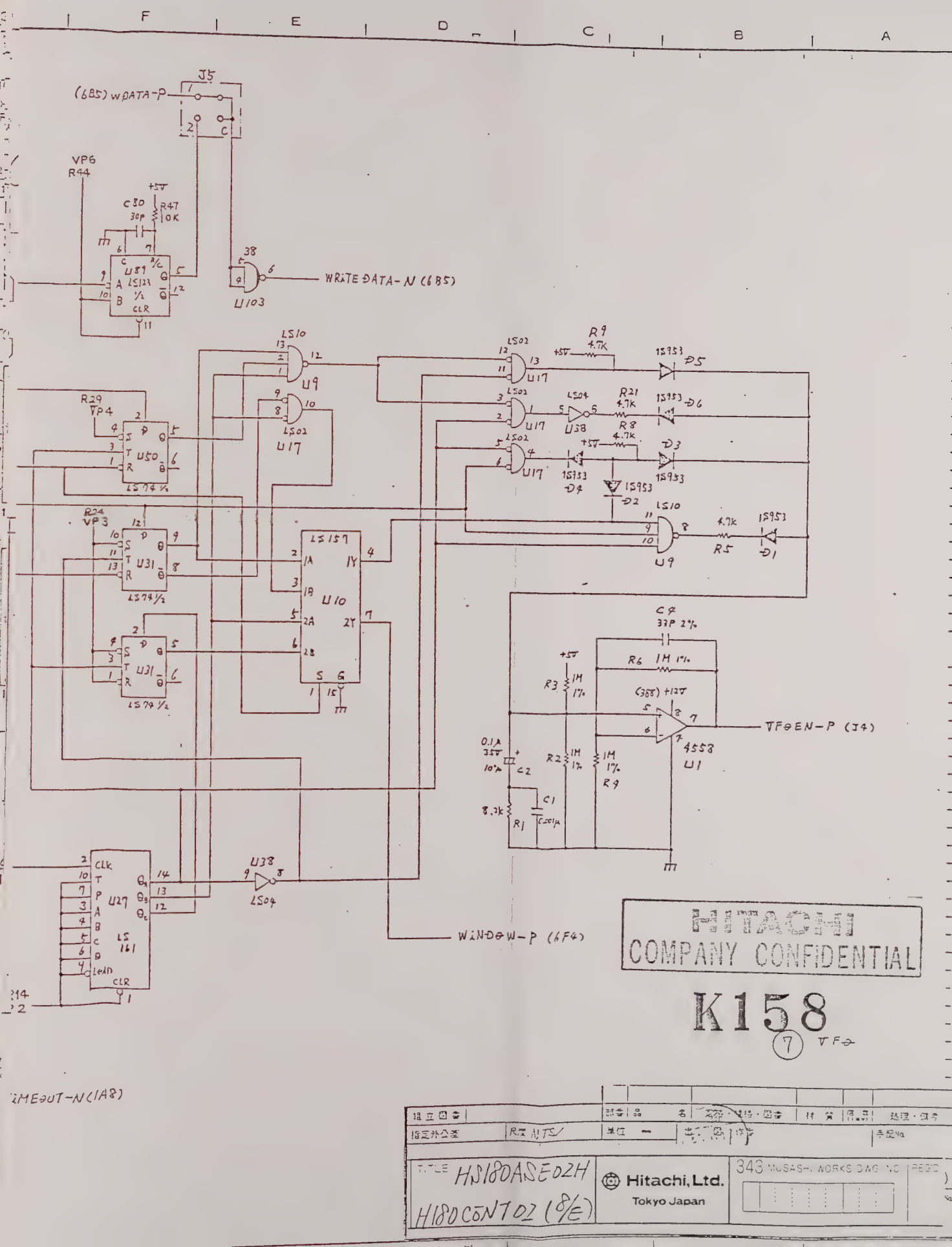
設立図番	部品名	定格・規格・図番	材質	処理・備考
指定外公差	尺度 NTS	単位 —	出図	工事記号	承認印

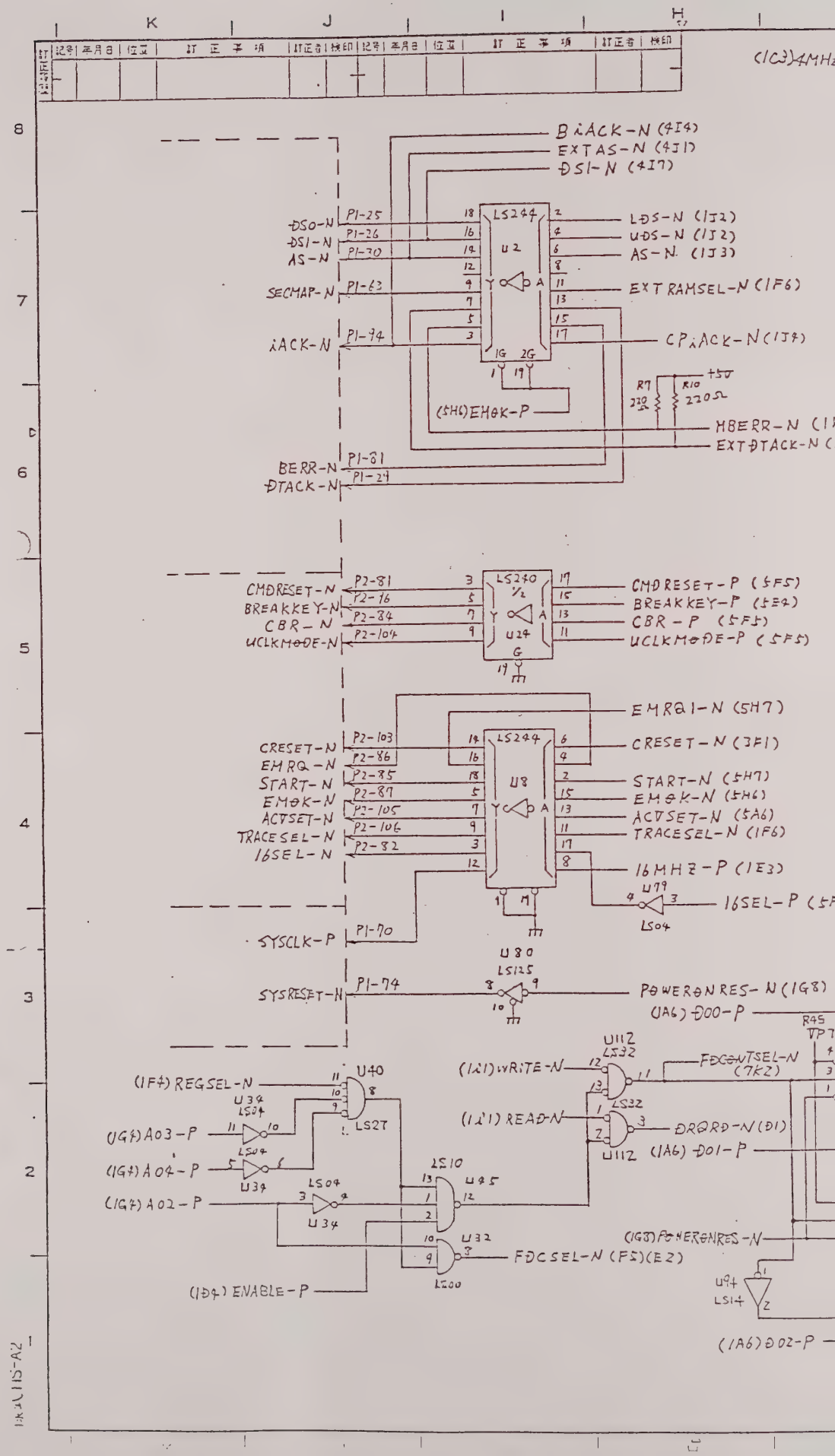
TITLE H180A501
H680A502T (1/10)

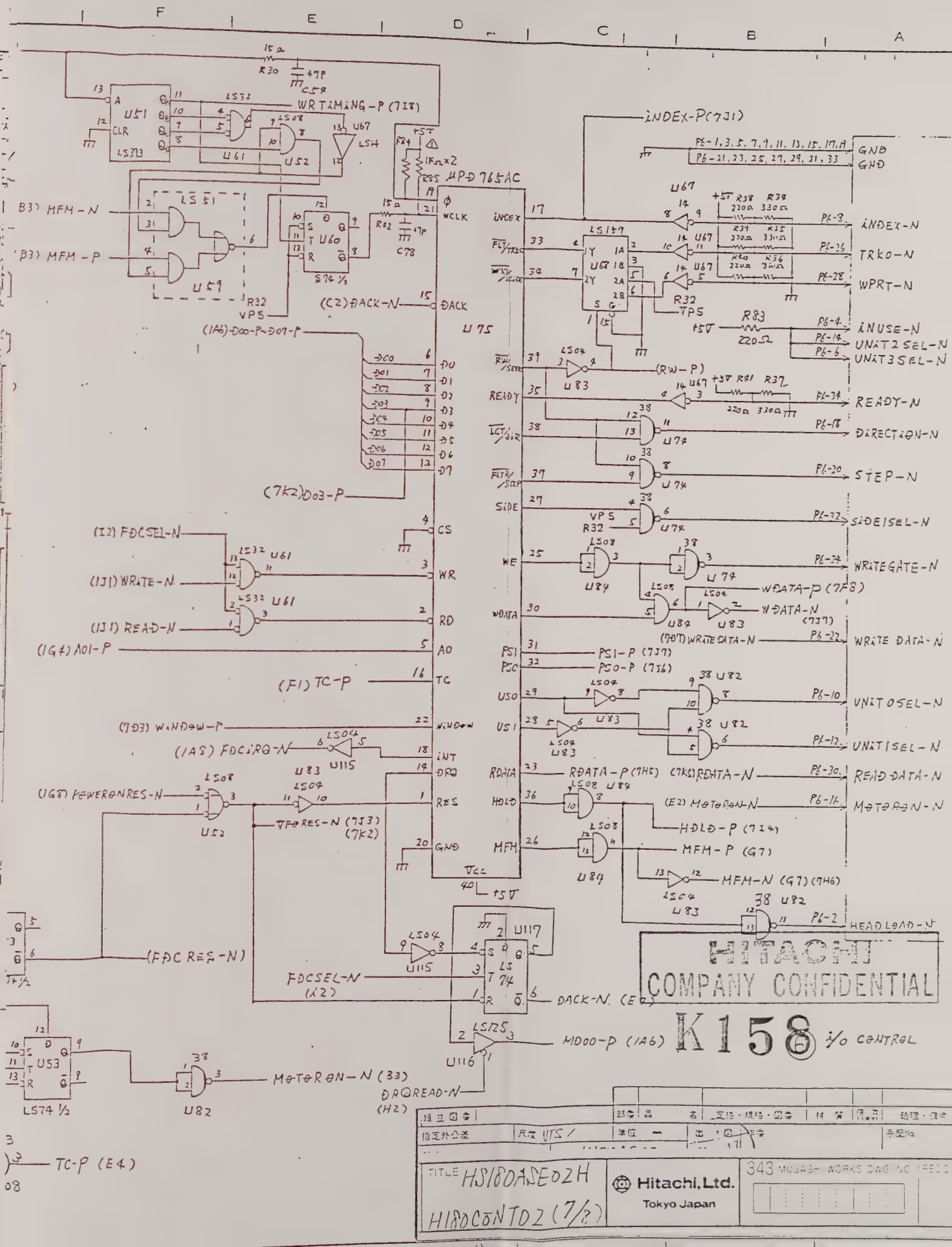
Hitachi, Ltd.
Tokyo Japan

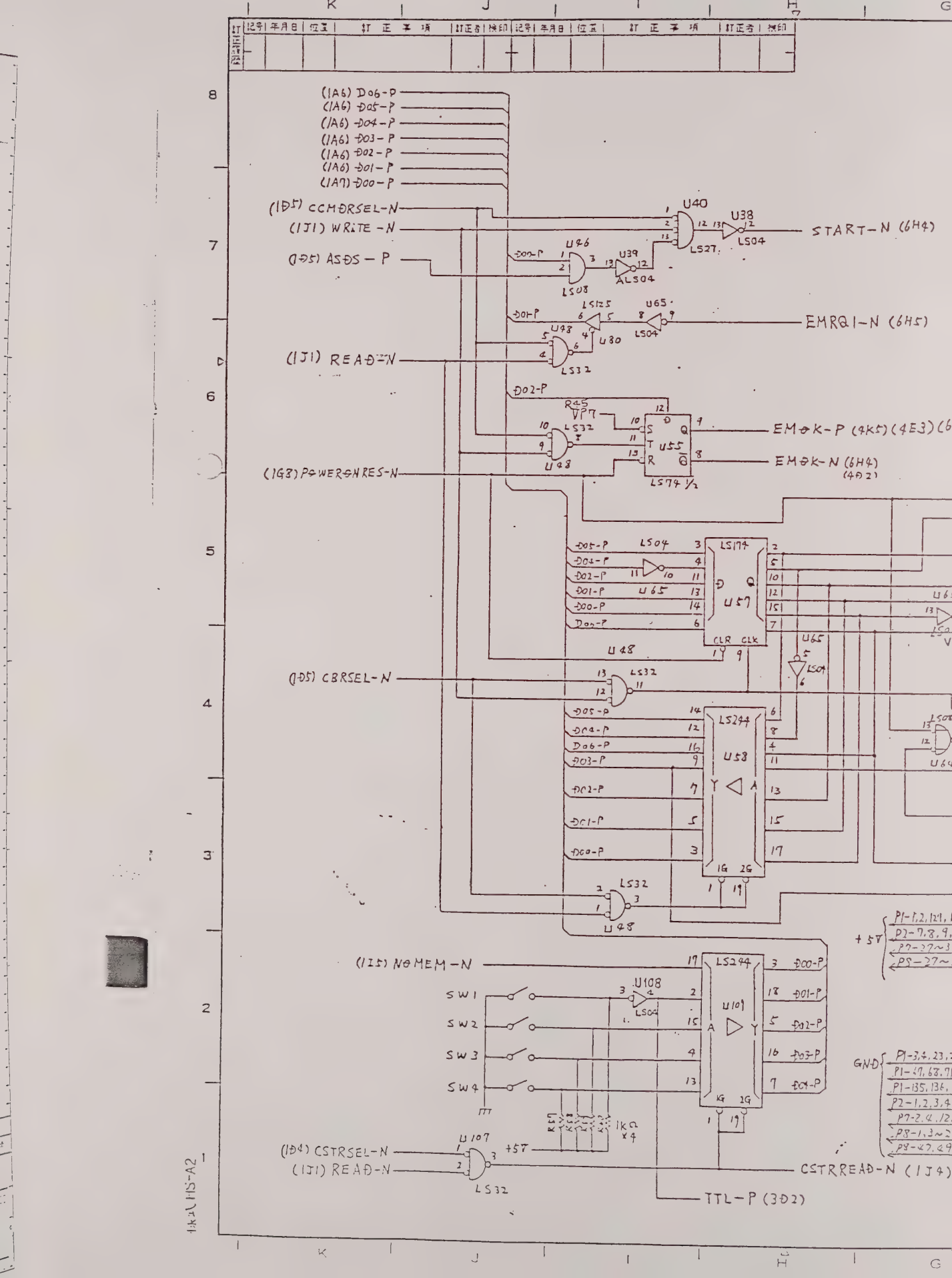
343 MUSASHI WORKS DWG NO

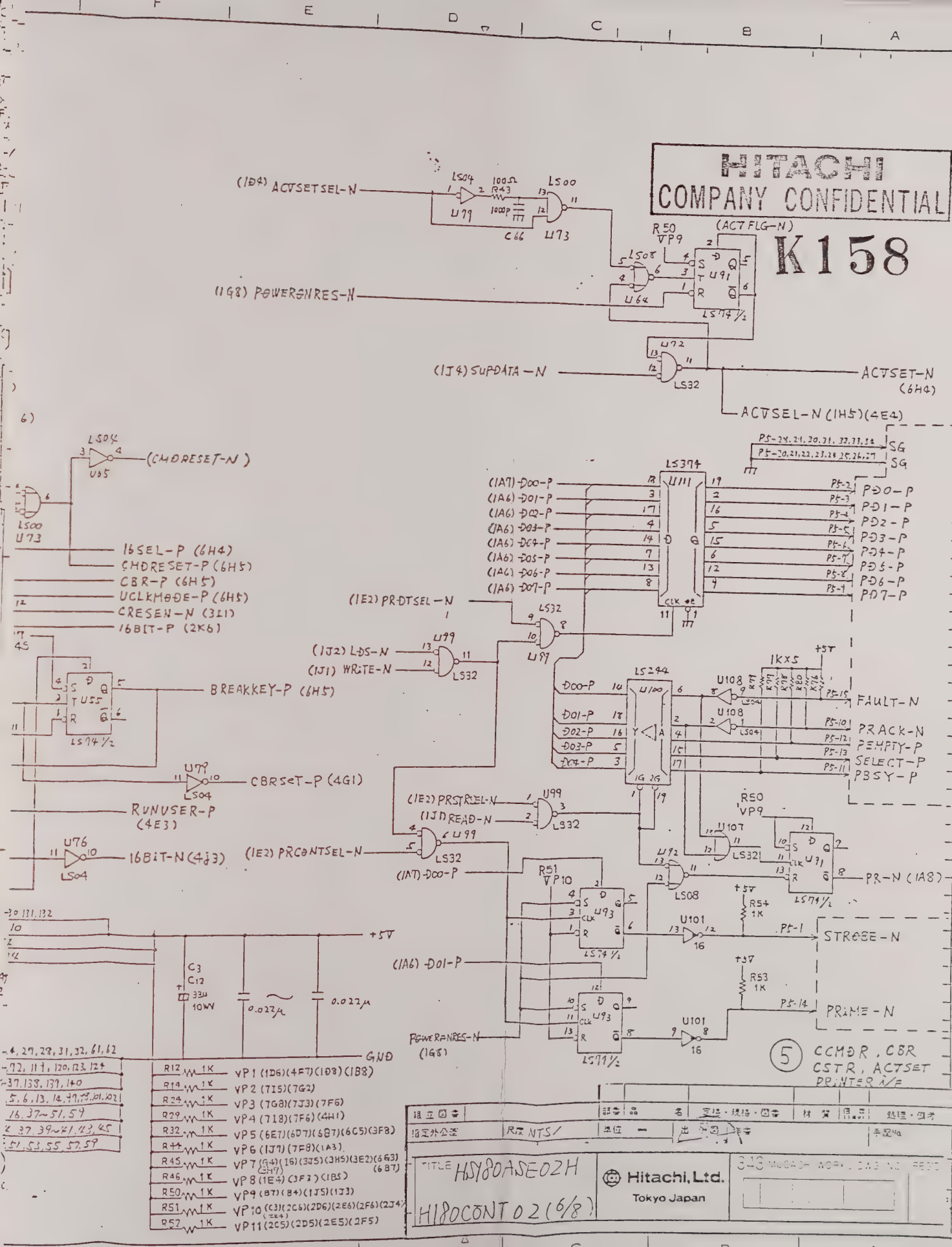

K
J
I
H
G
8
7
6
5
4
3
2
1
(6E8) WRTIMING-P
LS04
U76
R29
VP4
(6B5) WDATA-N
U43
LS74 1/2
U36
95
CK1
CK2
S1
HD
QA QB QC
LS04
U38
(6C4) PS1-P
U42
LS153
C2 C0 C3 C1
(6C4) PS0-P
U50
(6B3) MFM-N
C18
68P
R11
5.1K
1%
R23
22ΩΩ
R22
330Ω
+5V
(6B4) RDATA-N
U67
LS221
1/2
CLR
RDATA-P (6C4)
C25
200P
R13
9.1K
TR1
R14
VP2
U26
(6B3) HOLD-P
(A4) VFOEN-P
C38
C39
R26
R27
(6E3) VFORES-N
U37
R24
VP3
(6E5) D03-P
U117
VP
(6H3) FDCONTSEL-N
(6E3) VFORES-N
LS74
U118
LS164
CLR A B
CLK
QH
(6C8) INDEX-P
U115
LS04

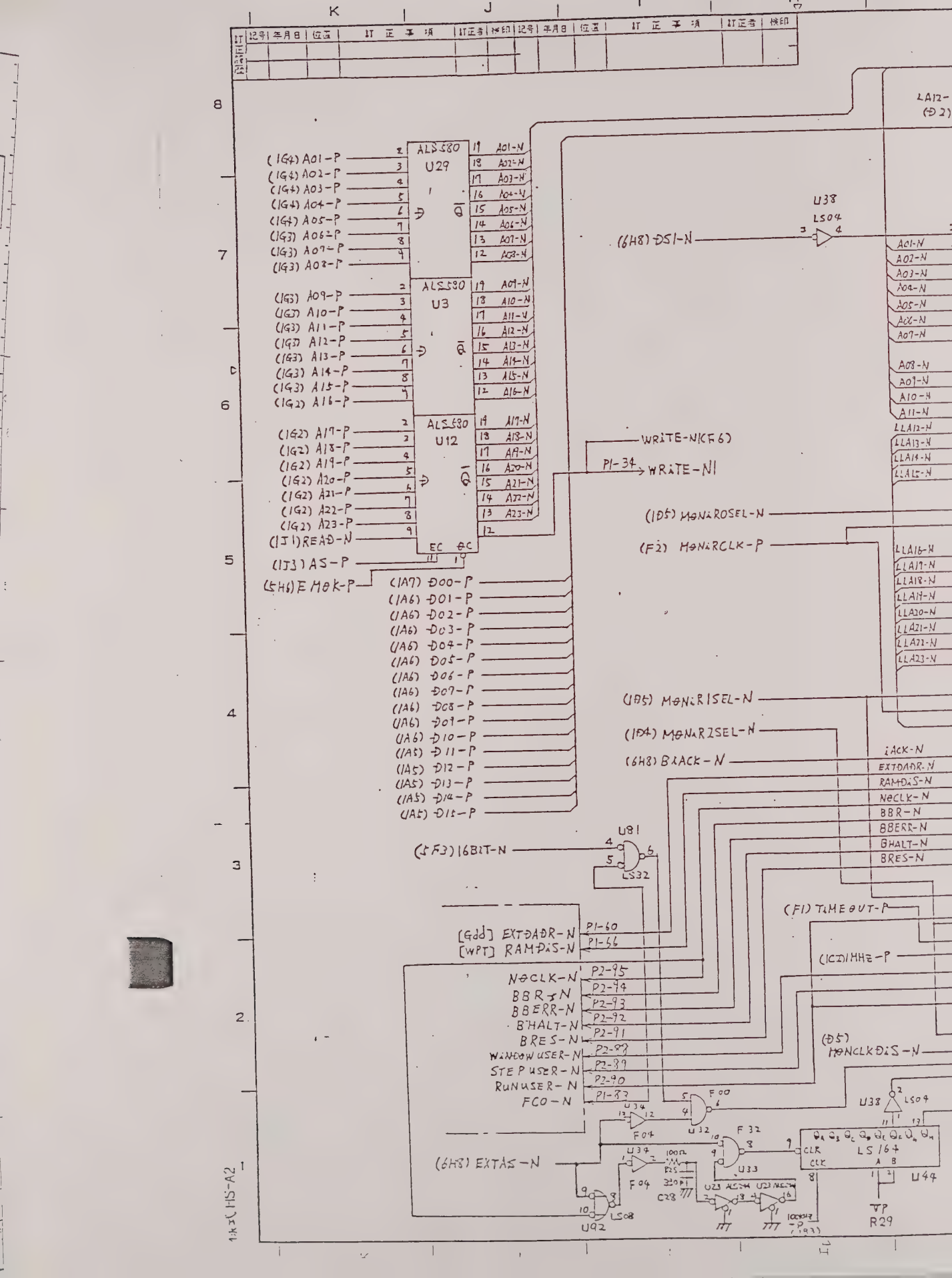

F E D C B A
J5
(6B5) WDATA-P
VP6
R44
C80
30P
R47
10K
+5V
U81
LS123
38
U103
WRITE DATA-N (6B5)
LS10
U9
LS02
U17
R9
4.7K
1S953
D5
R21
4.7K
LS04
U38
D6
R8
4.7K
D3
D4
D2
R5
D1
R29
VP4
U50
LS74 1/2
R24
VP3
U31
LS157
U10
C9
33P 2%
R6 1M 1%
R3 1M 1%
(38B) +12V
VFDEN-P (J4)
4558
U1
0.1μ
35V
10%
C2
R2 1M 1%
R4 1M 1%
8.2k
R1
C1
0.01μ
U27
LS 161
CLK
LOAD
CLR
WINDOW-P (6F4)
TIMEOUT-N (1A8)
HITACHI
COMPANY CONFIDENTIAL
K158
7
VFD
TITLE HS180ASE02H
H180CONT02 (8/E)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO

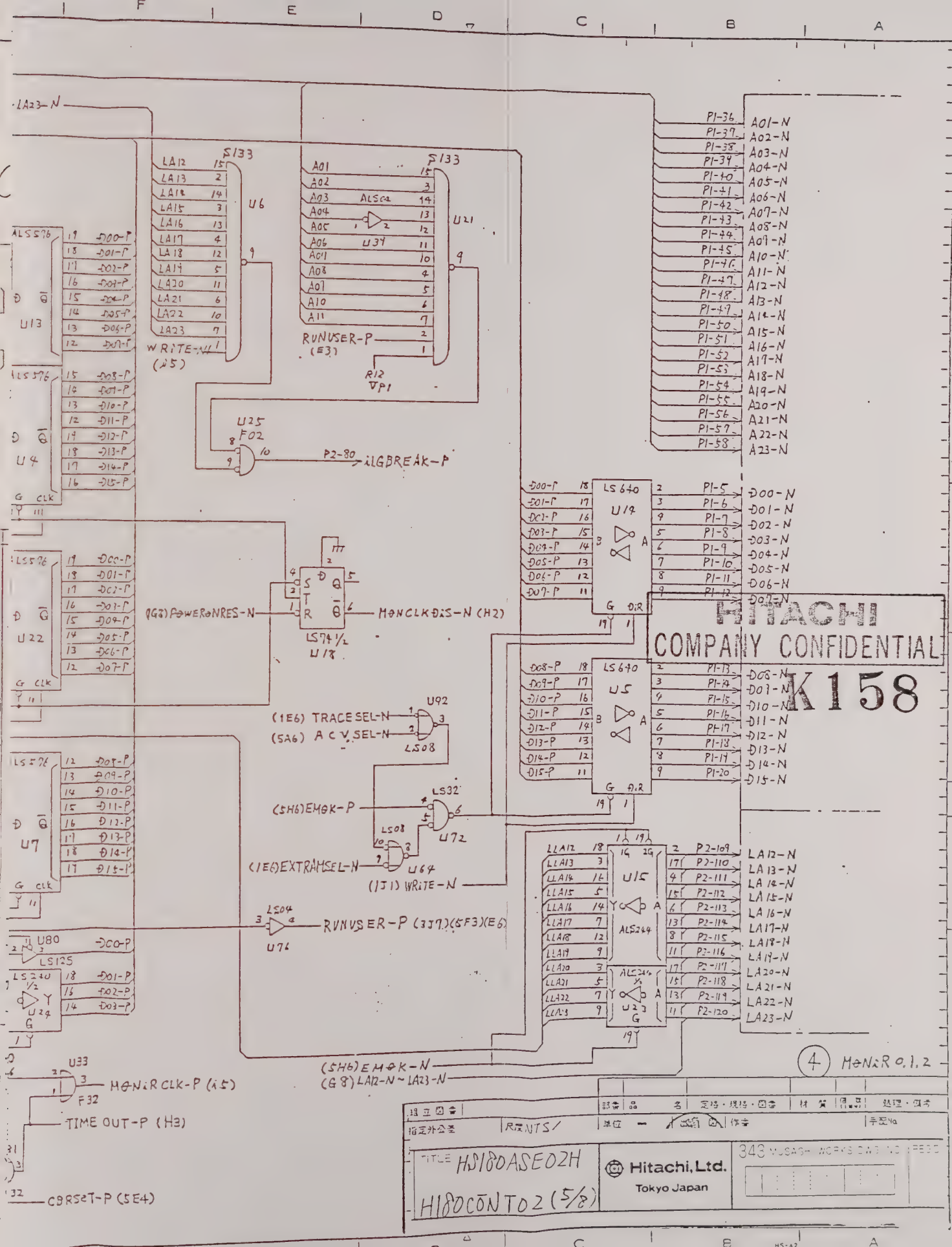

BIACK-N (4I4)
EXTAS-N (4I1)
DS1-N (4I7)
DS0-N
DS1-N
AS-N
P1-25
P1-26
P1-30
LS244
U2
LDS-N (1J2)
UDS-N (1J2)
AS-N (1J3)
SECMAP-N
P1-63
EXTRAMSEL-N (1F6)
IACK-N
P1-74
CPIACK-N (1J4)
(5H6)EMBK-P
+5V
R7 220Ω
R10 220Ω
MBERR-N (1
EXTDTACK-N (
BERR-N
P1-81
DTACK-N
P1-24
CMDRESET-N
BREAKKEY-N
CBR-N
UCLKMODE-N
P2-81
P2-76
P2-84
P2-104
LS240
1/2
U24
CMDRESET-P (5F5)
BREAKKEY-P (5E4)
CBR-P (5F5)
UCLKMODE-P (5F5)
EMRQ1-N (5H7)
CRESET-N
EMRQ-N
START-N
EMBK-N
ACTSET-N
TRACESEL-N
16SEL-N
P2-103
P2-86
P2-85
P2-87
P2-105
P2-106
P2-82
LS244
U8
CRESET-N (3F1)
START-N (5H7)
EMBK-N (5H6)
ACTSET-N (5A6)
TRACESEL-N (1F6)
16MHZ-P (1E3)
U79
LS04
16SEL-P (5
SYSCLK-P
P1-70
U80
LS125
SYSRESET-N
P1-74
POWERONRES-N (1G8)
(1A6) D00-P
U112
LS32
(1A1) WRITE-N
FDCINTSEL-N (7K2)
(1A1) READ-N
DRQRD-N (D1)
U112 (1A6) D01-P
(1F4) REGSEL-N
U40
LS27
U34
LS04
(1G4) A03-P
(1G4) A04-P
(1G4) A02-P
LS10
U45
U32
LS00
FDCSEL-N (F5)(E2)
(1D4) ENABLE-P
(1G8) PONERONRES-N
U94
LS14
(1A6) D02-P
8
7
6
5
4
3
2
1
K
J
I
H

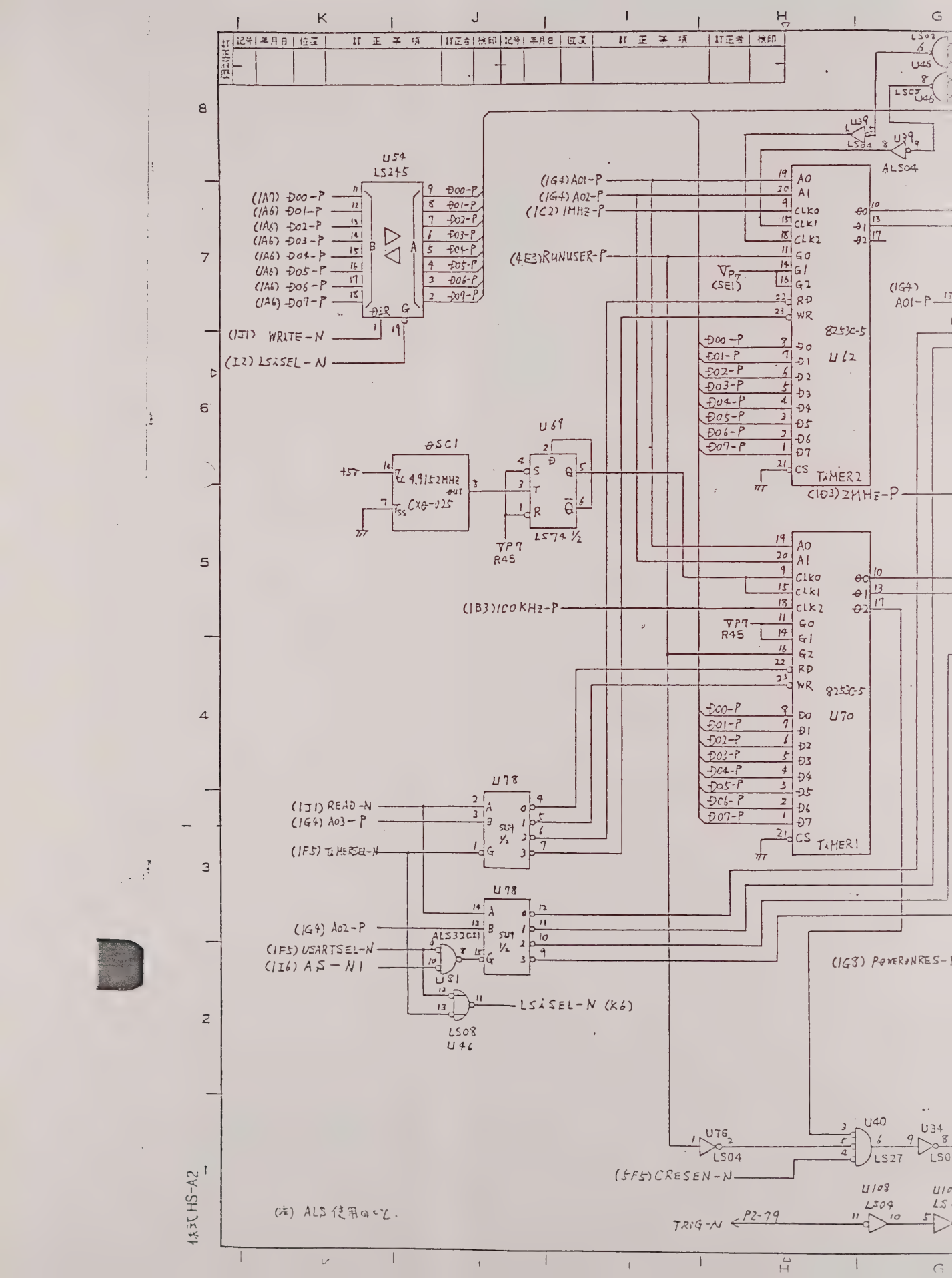

WRITIMING-P (7I8)
INDEX-P(7J1)
(B3) MFM-N
(B3) MFM-P
(C2) DACK-N
(1A6) D00-P~D07-P
(7K2) D03-P
(I2) FDCSEL-N
(1J1) WRITE-N
(1J1) READ-N
(1G4) A01-P
(F1) TC-P
(7D3) WINDOW-P
(1A8) FDCIRQ-N
(1G8) POWERONRES-N
FDC RES-N (7J3) (7K2)
(FDC RES-N)
FDCSEL-N (I2)
DACK-N. (E2)
MD00-P (1A6)
DRQREAD-N (H2)
MOTORON-N (B3)
TC-P (E4)
μPD765AC
U75
WCLK
INDEX
DACK
D0
D1
D2
D3
D4
D5
D6
D7
CS
WR
RD
A0
TC
WINDOW
INT
DRQ
RES
GND
VCC
RDATA
HDLD
MFM
PS1
PS0
US0
US1
WE
WDATA
RW/SEEK
READY
FLT/TRK0
WPRT/DIR
SIDE
GND
GND
INDEX-N
TRK0-N
WPRT-N
INUSE-N
UNIT2SEL-N
UNIT3SEL-N
READY-N
DIRECTION-N
STEP-N
SIDESEL-N
WRITEGATE-N
WDATA-P (7F8)
WDATA-N (7J7)
(7F8) WRITEDATA-N
WRITE DATA-N
PS1-P (7J7)
PS0-P (7J6)
UNIT0SEL-N
UNIT1SEL-N
RDATA-P (7H5) (7K5) RDATA-N
READ DATA-N
(E2) MOTORON-N
MOTORON-N
HDLD-P (7J4)
MFM-P (G7)
MFM-N (G7) (7H6)
HEADLOAD-N
VPS
R32
+5V
R83
220Ω
R84
1KΩx2
R85
15Ω
R30
47P
C54
C78
R82
U51
U52
U53
U59
U60
U61
U67
U74
U82
U83
U84
U115
U116
U117
LS32
LS08
LS04
LS51
LS74 ½
LS373
LS125
LS157
LS74
LSH
HITACHI
COMPANY CONFIDENTIAL
K158
I/O CONTROL
TITLE HS180ASE02H
HI80CONT02 (7/8)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO

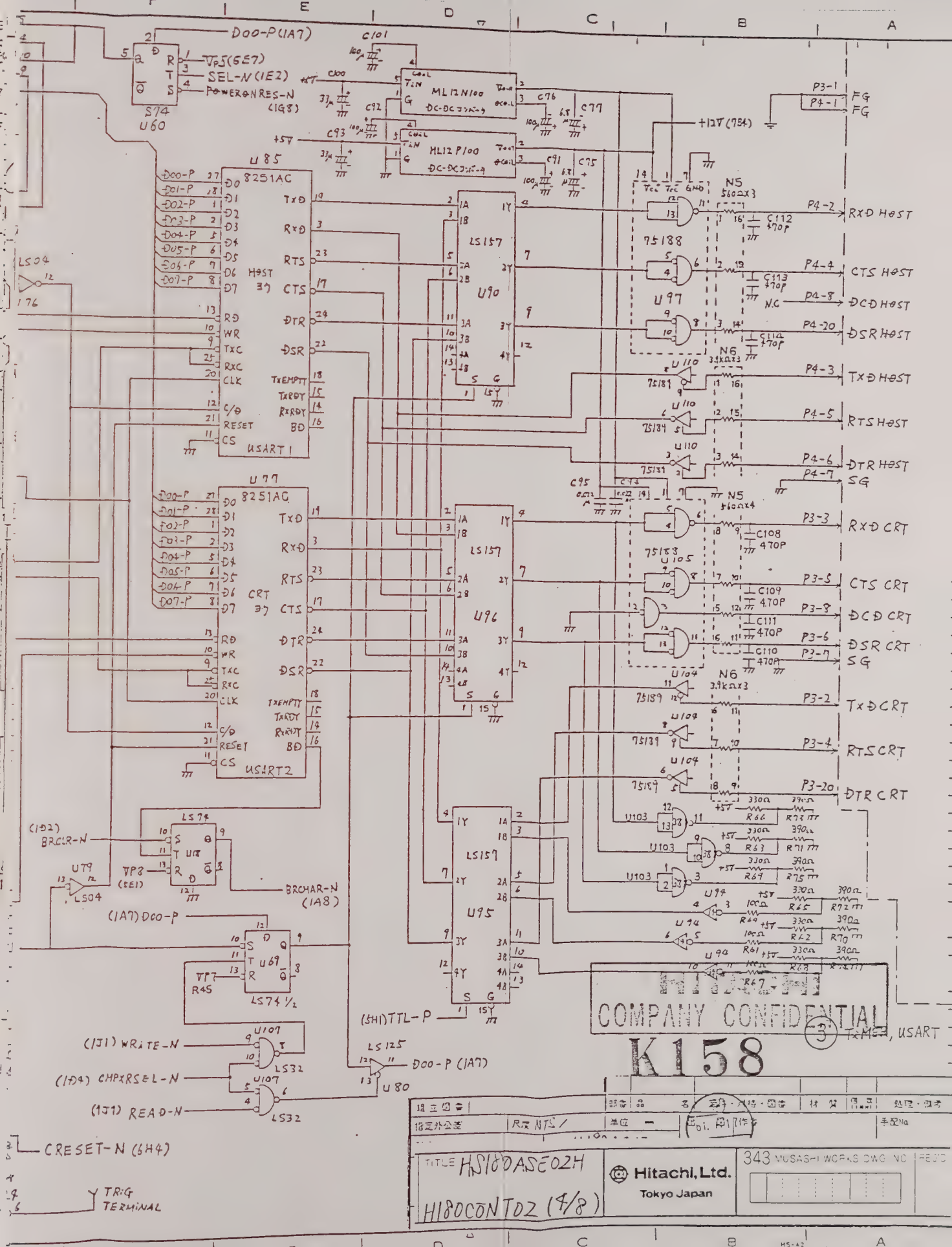

(1A6) D06-P
(1A6) D05-P
(1A6) D04-P
(1A6) D03-P
(1A6) D02-P
(1A6) D01-P
(1A7) D00-P
(1D5) CCMDRSEL-N
(1J1) WRITE-N
(1D5) ASDS-P
(1J1) READ-N
(1G8) POWERONRES-N
(1D5) CBRSEL-N
(1I5) NOMEM-N
(1D4) CSTRSEL-N
(1J1) READ-N
U40
U38
LS27
LS04
START-N (6H4)
U46
U39
LS08
ALS04
LS125
U65
U48
U80
LS32
EMRQ1-N (6H5)
R45
VPT
U55
LS74 1/2
EMDK-P (4K5)(4E3)(6
EMDK-N (6H4)
(4D2)
LS04
LS174
U57
CLR CLK
LS244
U58
U69
U108
U109
SW1
SW2
SW3
SW4
1kΩ x4
+5V
GND
P1-1,2,121,
P2-7,8,9,
P7-27~3
P8-27~
P1-3,4,23,
P1-67,68,7
P1-135,136,
P2-1,2,3,4
P7-2,4,12
P8-1,3~2
P8-47,49
CSTRREAD-N (1J4)
TTL-P (3D2)
1K2L115-A2

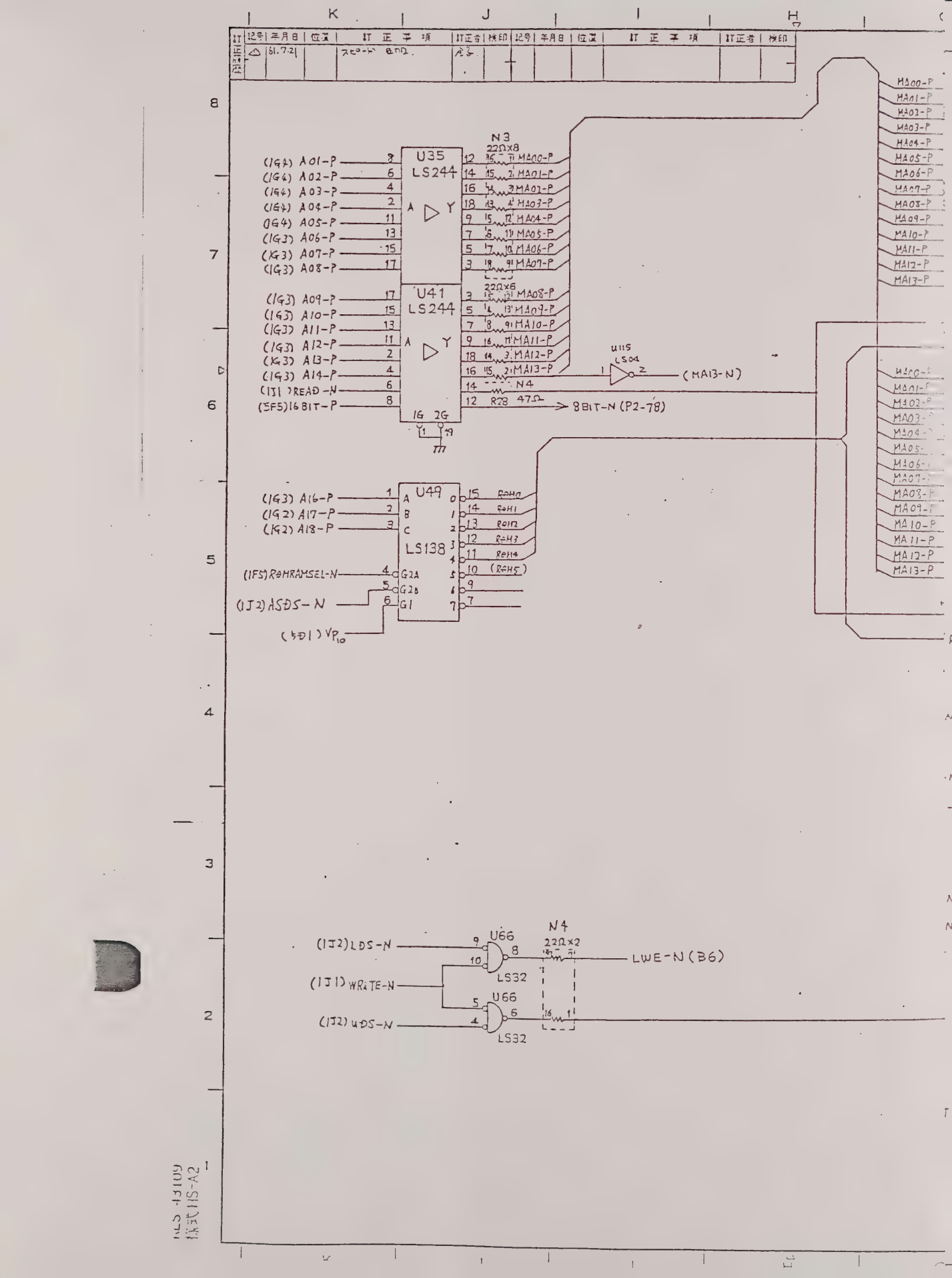

HITACHI
COMPANY CONFIDENTIAL
K158
(1D4) ACTSETSEL-N
(1G8) POWERSNRES-N
(1J4) SUPDATA-N
ACTSET-N (6H4)
ACTSEL-N (1H5)(4E4)
(AC7 FLG-N)
(CHDRESET-N)
16SEL-P (6H4)
CHDRESET-P (6H5)
CBR-P (6H5)
UCLKMODE-P (6H5)
CRESEN-N (3J1)
16BIT-P (2K6)
BREAKKEY-P (6H5)
CBRSET-P (4G1)
RUNUSER-P (4E3)
16BIT-N (4J3)
(1E2) PRDTSEL-N
(1J2) LDS-N
(1J1) WRITE-N
(1E2) PRSTBSEL-N
(1J1) READ-N
(1E2) PRCONTSEL-N
(1A7) DO0-P
(1A6) DO1-P
(1A6) DO2-P
(1A6) DO3-P
(1A6) DO4-P
(1A6) DO5-P
(1A6) DO6-P
(1A6) DO7-P
PD0-P
PD1-P
PD2-P
PD3-P
PD4-P
PD5-P
PD6-P
PD7-P
FAULT-N
PRACK-N
PEMPTY-P
SELECT-P
PBSY-P
PR-N (1A8)
STROBE-N
PRIME-N
+5V
GND
VP1 (1D6)(4E7)(1D8)(1B8)
VP2 (7I5)(7G2)
VP3 (7G8)(7J3)(7F6)
VP4 (7I8)(7F6)(4H1)
VP5 (6E7)(6D7)(6B7)(6C5)(3F8)
VP6 (1J7)(7F8)(1A3)
VP7 (1G4)(1G)(3J5)(3H5)(3E2)(6G3)(6B7)
VP8 (1E4)(3F3)(1B5)
VP9 (B7)(B4)(1J5)(1J3)
VP10 (C3)(2C6)(2D6)(2E6)(2F6)(2J4)
VP11 (2C5)(2D5)(2E5)(2F5)
5 CCMDR, CBR
CSTR, ACTSET
PRINTER I/F
TITLE HSI80ASE02H
HI80CONT02(6/8)
Hitachi, Ltd.
Tokyo Japan

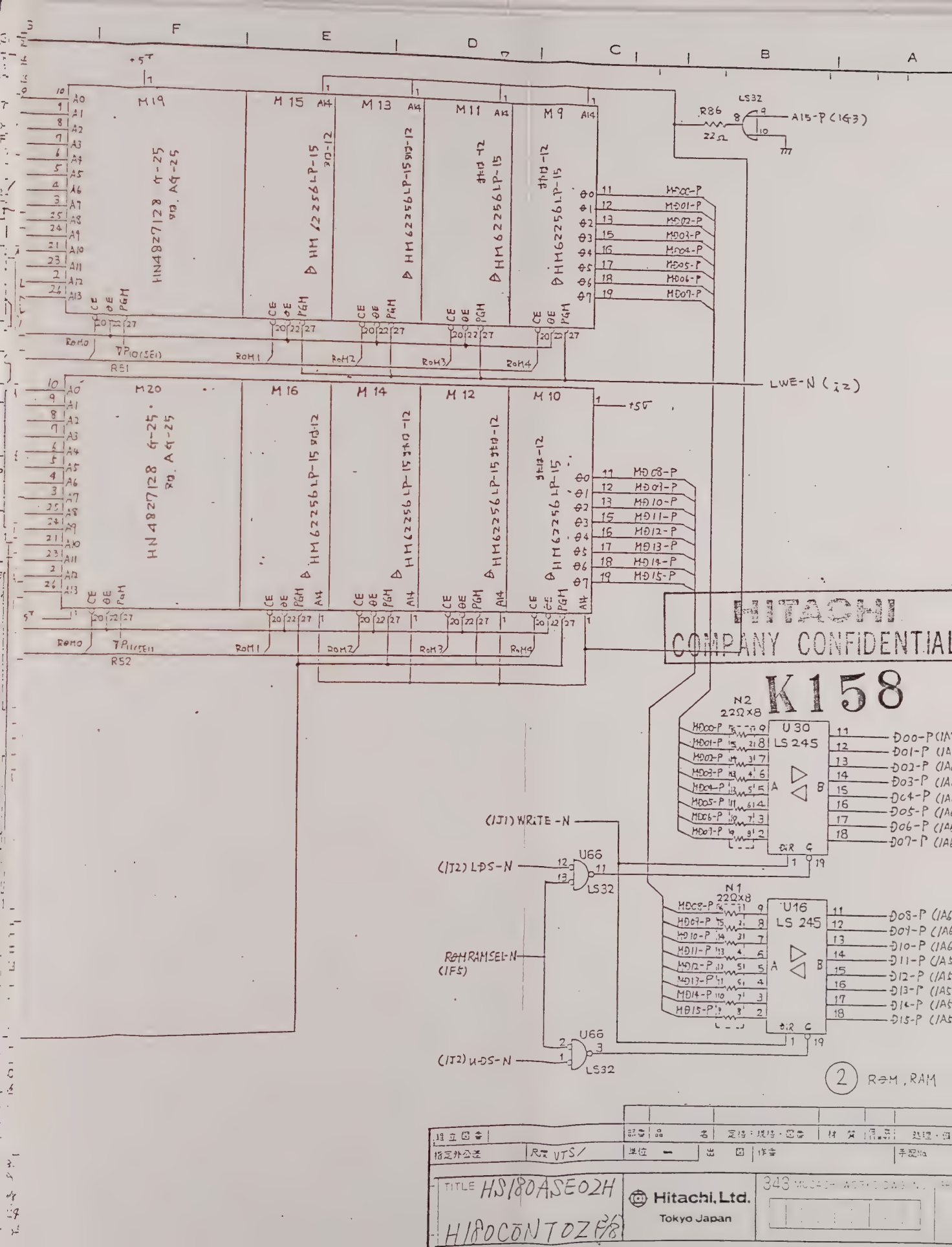

ALS580 U29
ALS580 U3
ALS580 U12
(IG4) A01-P
(IG4) A02-P
(IG4) A03-P
(IG4) A04-P
(IG4) A05-P
(IG3) A06-P
(IG3) A07-P
(IG3) A08-P
(IG3) A09-P
(IG3) A10-P
(IG3) A11-P
(IG3) A12-P
(IG3) A13-P
(IG3) A14-P
(IG3) A15-P
(IG2) A16-P
(IG2) A17-P
(IG2) A18-P
(IG2) A19-P
(IG2) A20-P
(IG2) A21-P
(IG2) A22-P
(IG2) A23-P
(IJ1) READ-N
(IJ3) AS-P
(6H6) EMBK-P
A01-N
A02-N
A03-N
A04-N
A05-N
A06-N
A07-N
A08-N
A09-N
A10-N
A11-N
A12-N
A13-N
A14-N
A15-N
A16-N
A17-N
A18-N
A19-N
A20-N
A21-N
A22-N
A23-N
EC
OC
U38 LS04
(6H8) DS1-N
WRITE-N(F6)
P1-34 WRITE-N1
(1D5) MONAROSEL-N
(F2) MONARCLK-P
LLA12-N
LLA13-N
LLA14-N
LLA15-N
LLA16-N
LLA17-N
LLA18-N
LLA19-N
LLA20-N
LLA21-N
LLA22-N
LLA23-N
(1B5) MONAR1SEL-N
(1B4) MONAR2SEL-N
(6H8) BIACK-N
IACK-N
EXTDADR-N
RAMDIS-N
NOCLK-N
BBR-N
BBERR-N
BHALT-N
BRES-N
U81 LS32
(5F3) 16BIT-N
(F1) TIMEOUT-P
(1C2) HHE-P
[GDD] EXTDADR-N P1-60
[WPT] RAMDIS-N P1-66
NOCLK-N P2-95
BBR-N P2-94
BBERR-N P2-93
BHALT-N P2-92
BRES-N P2-91
WINDOWUSER-N P2-89
STEPUSER-N P2-90
RUNUSER-N P2-87
FCO-N P1-87
(D5) MONCLKDIS-N
U34 F04
U32 F00
U33 F32
(6H8) EXTAS-N
U37 F04
R25 100Ω
C28 330pF
U23 ALS244
U49 LS164
U92 LS08
R29
100KΩ
(1B3)

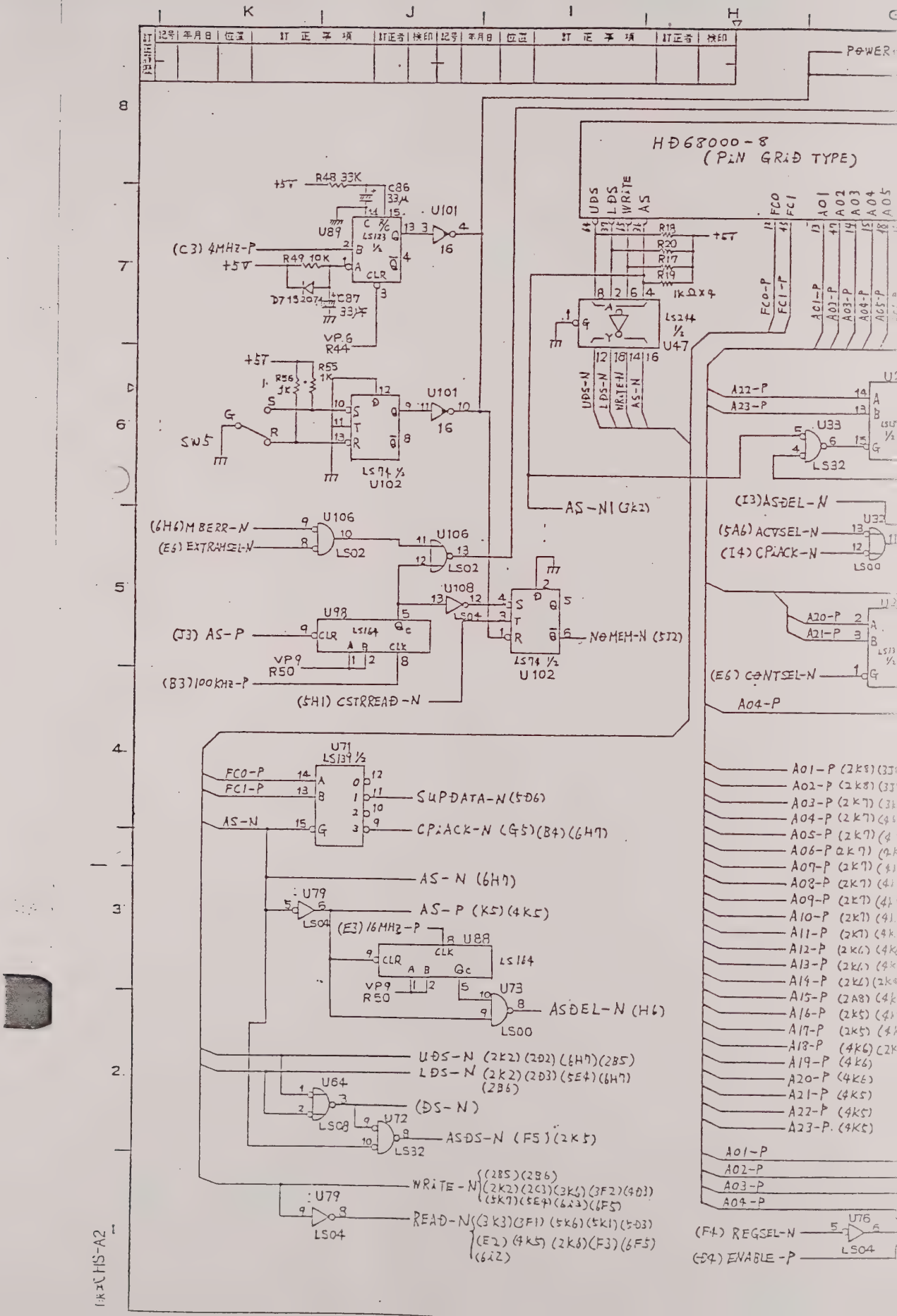

HITACHI
COMPANY CONFIDENTIAL
K158
LA23-N
WRITE-N (J5)
RUNUSER-P (E3)
P2-80 iLGBREAk-P
(1E6) TRACESEL-N
(5A6) ACVSEL-N
(5H6)EMGK-P
(1E6)EXTRAMSEL-N
(1J1) WRITE-N
RUNUSER-P (3J7)(5F3)(E6)
MONCLKDIS-N (H2)
(G8)POWERONRES-N
(5H6)EMGK-N
(G8) LA12-N ~ LA23-N
MONIR CLK-P (A5)
TIME OUT-P (H3)
CORSET-P (5E4)
4 MONIR 0,1,2
HS180ASE02H
H180CONTO2 (5/8)
Hitachi, Ltd.
Tokyo Japan

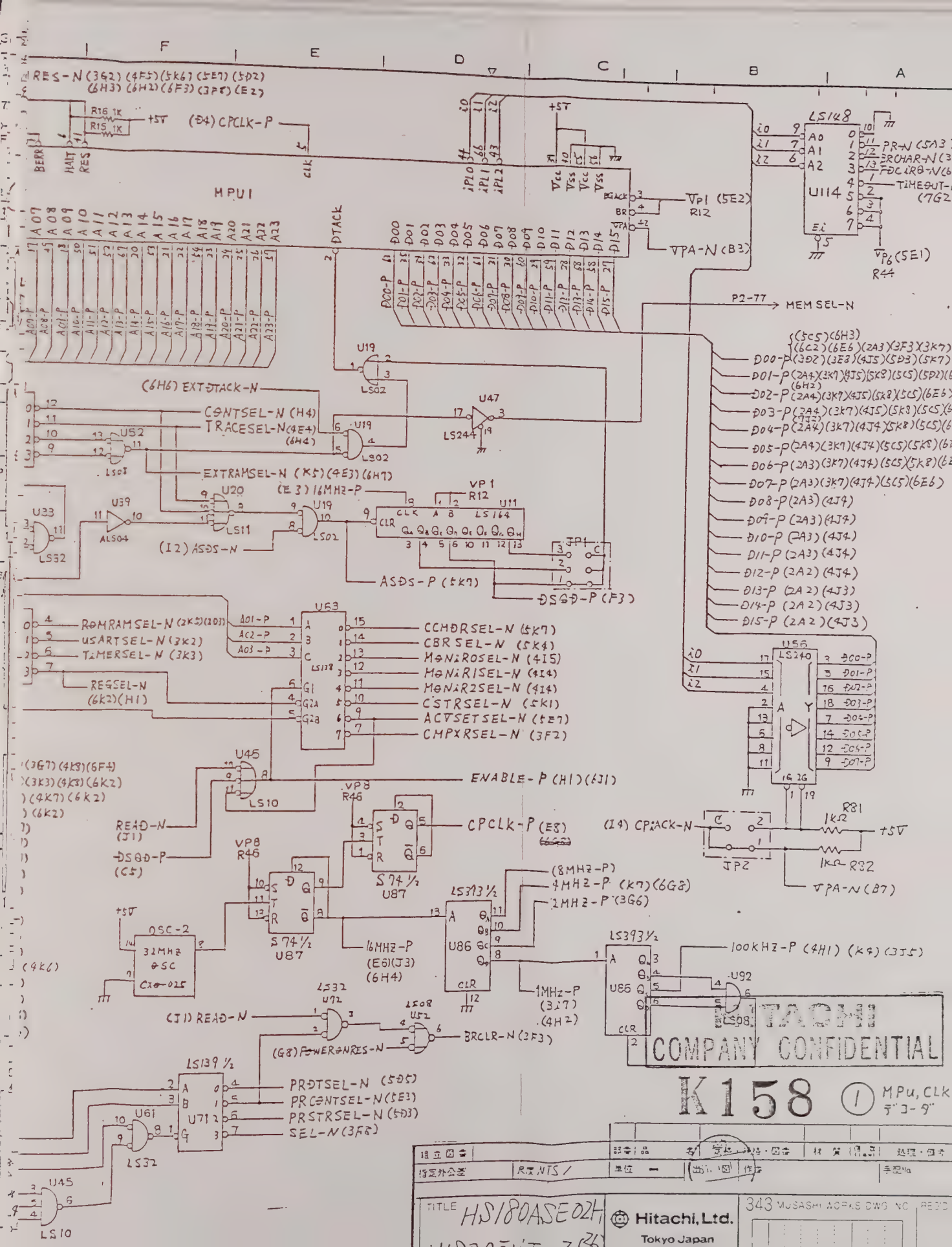

U54
LS245
(IA7) D00-P
(IA6) D01-P
(IA6) D02-P
(IA6) D03-P
(IA6) D04-P
(IA6) D05-P
(IA6) D06-P
(IA6) D07-P
(IJ1) WRITE-N
(I2) LSASEL-N
(IG4) A01-P
(IG4) A02-P
(IC2) 1MHz-P
(4E3) RUNUSER-P
(SE1)
8253C-5
U62
TIMER2
(ID3) 2MHz-P
OSC1
4.9152MHz
CXO-025
LS74 1/2
R45
(IB3) 100KHz-P
U70
TIMER1
U78
LS32
(IJ1) READ-N
(IG4) A03-P
(IF5) TIMERSEL-N
(IG4) A02-P
(IF5) USARTSEL-N
(IG8) POWERONRES-
(I6) AS-N1
ALS32C01
U81
LS08
U46
LSASEL-N (k6)
ALS04
U40
LS27
U34
(SF5) CRESEN-N
TRIG-N
P2-79
(注) ALS 使用のこと.
1.85(HS-A2

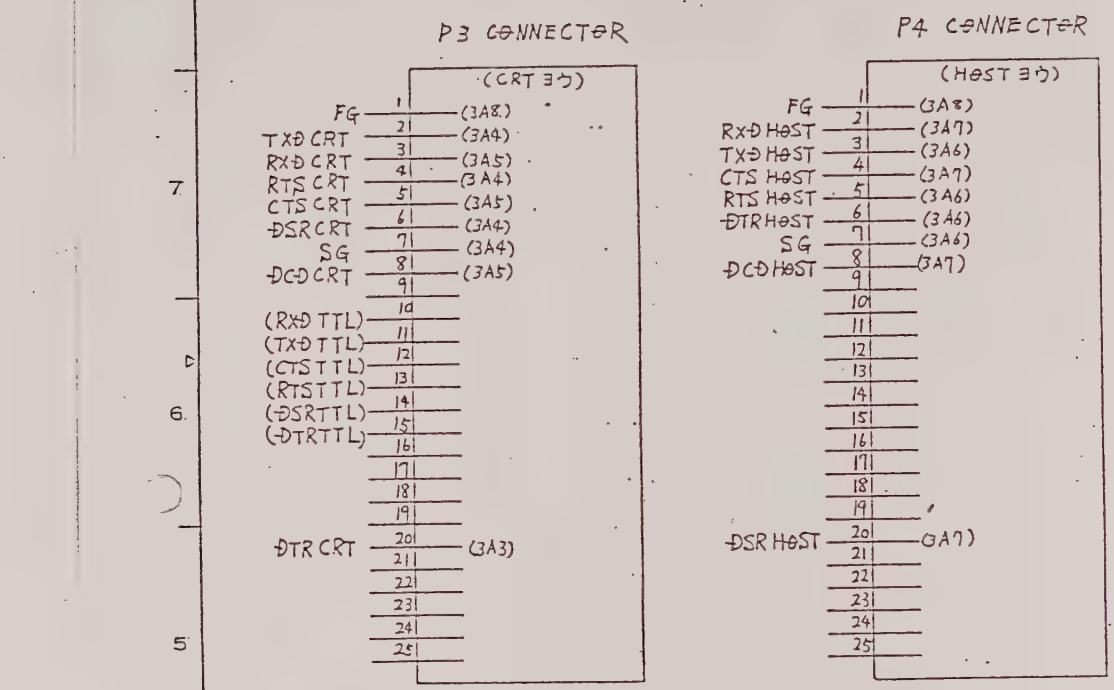

D00-P(1A7)
VP5(5E7)
SEL-N(1E2)
POWERONRES-N (1G8)
S74
U60
C101
C100
C92
C93
ML12N100
DC-DC コンバータ
ML12P100
+5V
+12V(7B4)
P3-1 FG
P4-1 FG
U85
8251AC
TxD
RxD
RTS
CTS
DTR
DSR
HOST
RD
WR
TxC
RxC
CLK
C/D
RESET
CS
USART1
LS157
U90
N5
5602x3
75188
U97
N6
3.3kΩx3
75189
U110
P4-2 RxD HOST
P4-4 CTS HOST
P4-8 DCD HOST
P4-20 DSR HOST
P4-3 TxD HOST
P4-5 RTS HOST
P4-6 DTR HOST
P4-7 SG
C112 470P
C113 470P
C114 470P
U77
8251AC
CRT
USART2
U96
U105
U104
P3-3 RxD CRT
P3-5 CTS CRT
P3-8 DCD CRT
P3-6 DSR CRT
P3-7 SG
P3-2 TxD CRT
P3-4 RTS CRT
P3-20 DTR CRT
C108 470P
C109 470P
C111 470P
C110 470P
U95
U103
U94
330Ω
390Ω
100Ω
R66
R63
R67
R65
R62
R61
R68
R72
R71
R75
R69
R70
R73
(1D2) BRCLR-N
(1E1)
BRCHAR-N (1A8)
(1A7) D00-P
R45
(5H1) TTL-P
LS125
U80
D00-P (1A7)
(1J1) WRITE-N
(1H4) CHPXRSEL-N
(1J1) READ-N
U107
LS32
CRESET-N (6H4)
TRIG TERMINAL
COMPANY CONFIDENTIAL
K158
TIMER, USART
TITLE HS180ASE02H
HI80CONT02 (4/8)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO

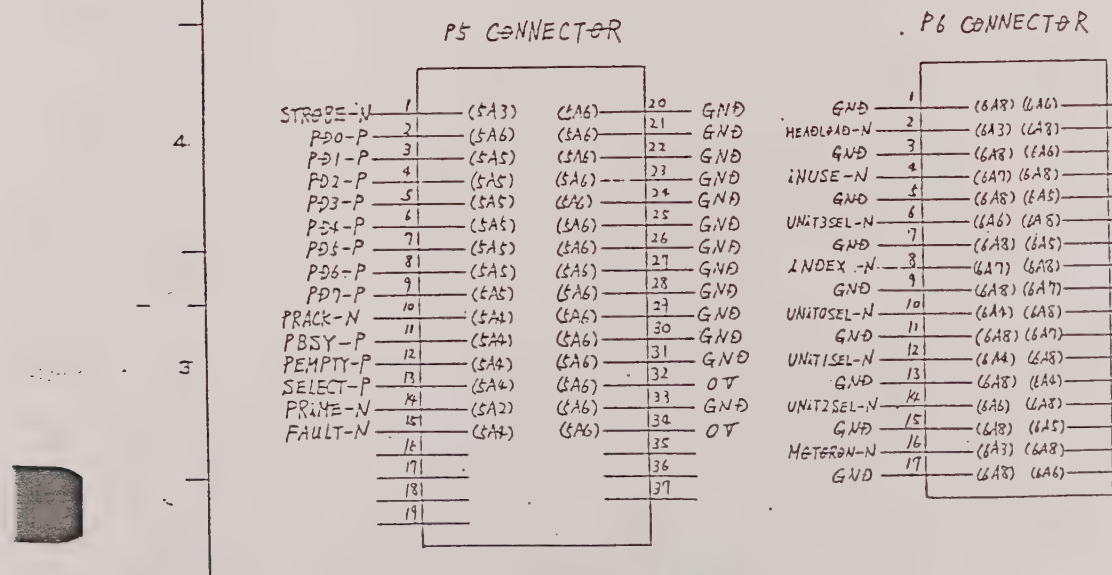

U35
LS244
U41
LS244
N3
22Ω×8
22Ω×6
U115
LS04
N4
22Ω×2
U49
LS138
U66
LS32
U66
LS32
(IG4) A01-P
(IG4) A02-P
(IG4) A03-P
(IG4) A04-P
(IG4) A05-P
(IG3) A06-P
(IG3) A07-P
(IG3) A08-P
(IG3) A09-P
(IG3) A10-P
(IG3) A11-P
(IG3) A12-P
(IG3) A13-P
(IG3) A14-P
(IJ1) READ-N
(5F5) 16BIT-P
MA00-P
MA01-P
MA02-P
MA03-P
MA04-P
MA05-P
MA06-P
MA07-P
MA08-P
MA09-P
MA10-P
MA11-P
MA12-P
MA13-P
(MA13-N)
8BIT-N (P2-78)
R28 47Ω
(IG3) A16-P
(IG2) A17-P
(IG2) A18-P
(1F5) RAMRAMSEL-N
(IJ2) ASDS-N
(5D1) VP10
(IJ2) LDS-N
(IJ1) WRITE-N
(IJ2) UDS-N
LWE-N (B6)

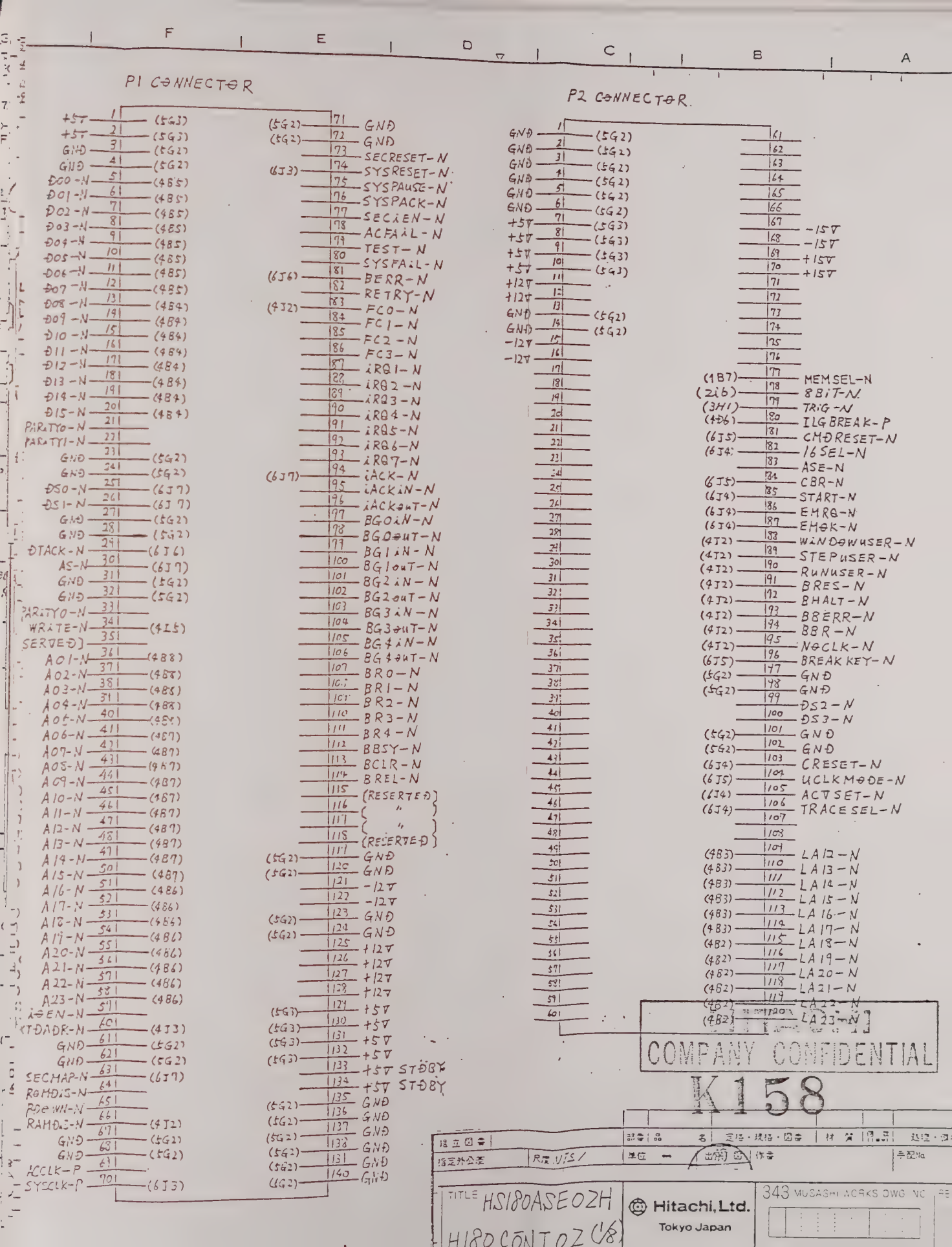

M19
M15
M13
M11
M9
M20
M16
M14
M12
M10
HN4827128 G-25
HM622561P-15
RAM
ROM0
ROM1
ROM2
ROM3
ROM4
R51
R52
LWE-N (12)
HITACHI
COMPANY CONFIDENTIAL
K158
N2
22Ω×8
U30
LS245
N1
U16
U66
LS32
(IJ1) WRITE-N
(IJ2) LDS-N
(IJ2) UDS-N
ROM RAMSEL-N
(IF5)
R86
22Ω
LS32
A15-P (1G3)
2 ROM, RAM
TITLE HS180ASE02H
HI80CONTOZ(78)
Hitachi, Ltd.
Tokyo Japan

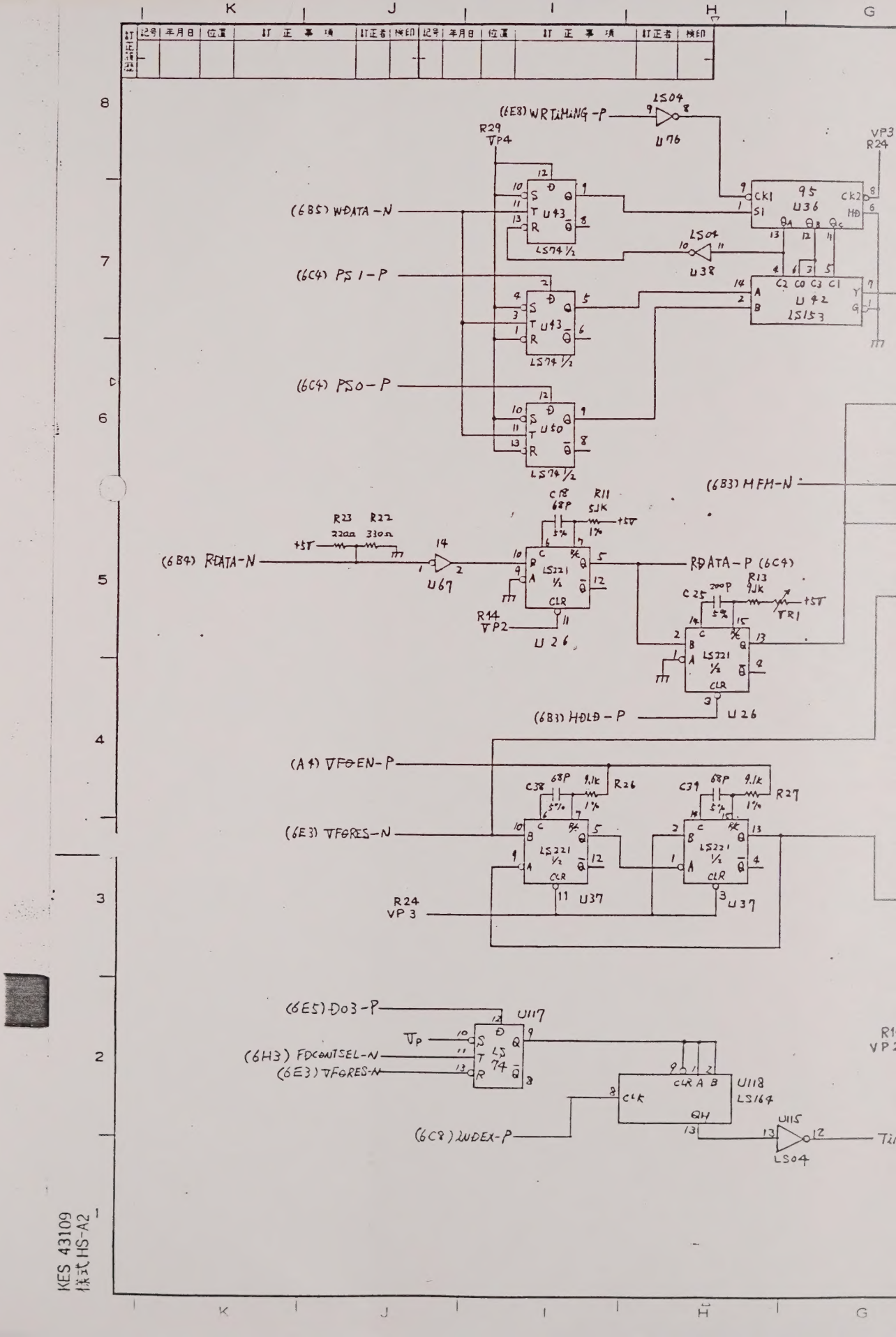

HD68000-8
(PIN GRID TYPE)
POWER
U101
U102
U106
U108
U98
U89
U88
U71
U79
U64
U72
U73
U47
U33
U76
R48 33K
R49 10K
R44
R50
R55
R56 1K
R18
R19
R20
R17
1KΩx4
C86 33μ
C87 33μ
SW5
(C3) 4MHz-P
(J3) AS-P
(B3) 100kHz-P
(5H1) CSTRREAD-N
(6H6) MBERR-N
(E6) EXTRAMSEL-N
AS-N1 (3k2)
NOMEM-N (5F2)
(I3) ASDEL-N
(5A6) ACVSEL-N
(I4) CPUACK-N
(E6) CONTSEL-N
A04-P
FC0-P
FC1-P
SUPDATA-N (5D6)
CPUACK-N (G5)(B4)(6H7)
AS-N (6H7)
AS-P (K5)(4k5)
(E3) 16MHz-P
ASDEL-N (H6)
UDS-N (2k2)(2D2)(6H7)(2B5)
LDS-N (2k2)(2D3)(5E4)(6H7) (2B6)
(DS-N)
ASDS-N (F5)(2k5)
WRITE-N (2B5)(2B6) (2k2)(2C3)(3k5)(3F2)(4D3) (5k7)(5E4)(6k3)(6F5)
READ-N (3k3)(3F1)(5k6)(5k1)(5D3) (E2)(4k5)(2k8)(F3)(6F5) (6k2)
(F4) REGSEL-N
(E4) ENABLE-P
A01-P
A02-P
A03-P
A04-P
LS123
LS74
LS244
LS32
LS02
LS04
LS164
LS00
LS139


RES-N (3G2) (4F5) (5K6) (5E7) (5D2)
(6H3) (6H2) (6F3) (3F6) (E2)
MPU1
(D4) CPCLK-P
+5V
R16 1K
R15 1K
BERR
HALT
RES
CLK
A07 A08 A09 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22 A23
DTACK
D00 D01 D02 D03 D04 D05 D06 D07 D08 D09 D10 D11 D12 D13 D14 D15
IPL0 IPL1 IPL2
VPI (5E2)
R12
VPA-N (B3)
LS148
U114
PR-N (5A3)
BRCHAR-N (3
FDC IRQ-N (6
TIMEOUT-
(7G2)
VP6 (5E1)
R44
P2-77 → MEM SEL-N
(5C5) (6H3)
(6C2) (6E6) (2A3) (3F3) (3K7)
D00-P (3D2) (3E3) (4J5) (5D3) (5K7)
D01-P (2A4) (2K7) (4J5) (5K8) (5C5) (5D2)
D02-P (6H2) (2A4) (3K7) (4J5) (5K8) (5C5) (6E6)
D03-P (2A4) (3K7) (4J5) (5K8) (5C5)
D04-P (2A4) (3K7) (4J4) (5K8) (5C5)
D05-P (2A4) (3K7) (4J4) (5C5) (5K8)
D06-P (2A3) (3K7) (4J4) (5C5) (5K8)
D07-P (2A3) (3K7) (4J4) (5C5) (6E6)
D08-P (2A3) (4J4)
D09-P (2A3) (4J4)
D10-P (2A3) (4J4)
D11-P (2A3) (4J4)
D12-P (2A2) (4J4)
D13-P (2A2) (4J3)
D14-P (2A2) (4J3)
D15-P (2A2) (4J3)
(6H6) EXTDTACK-N
U19
LS02
U47
LS244
CONTSEL-N (H4)
TRACESEL-N (3E4) (6H4)
U52
LS08
EXTRAMSEL-N (K5) (4E3) (6H7)
U20
LS11
U39
ALS04
U33
LS32
(E3) 16MHZ-P
(I2) ASDS-N
VP1
R12
U11
LS164
JP1
ASDS-P (5K7)
DSDD-P (F3)
U56
LS240
U63
LS138
ROMRAMSEL-N (2K2) (2D1)
USARTSEL-N (3K2)
TIMERSEL-N (3K3)
REGSEL-N (6K2) (H1)
CCMDRSEL-N (5K7)
CBRSEL-N (5K4)
MONIROSEL-N (4I5)
MONIR1SEL-N (4I4)
MONIR2SEL-N (4I4)
CSTRSEL-N (5K1)
ACTSETSEL-N (5E7)
CMPXRSEL-N (3F2)
(3G7) (4K3) (6F4)
(3K3) (6K3) (6K2)
(4K7) (6K2)
(6K2)
(9K6)
U45
LS10
ENABLE-P (H1) (J1)
READ-N (J1)
DSDD-P (C5)
VP8
R46
S74 1/2
U87
CPCLK-P (E8)
(I4) CPIACK-N
R81 1K
R82 1K
JP2
VPA-N (B7)
OSC-2
32MHZ OSC
CXO-025
16MHZ-P (E6) (J3) (6H4)
LS393 1/2
U86
(8MHZ-P)
4MHZ-P (K7) (6G8)
2MHZ-P (3G6)
1MHZ-P (3J7) (4H2)
100KHZ-P (4H1) (K4) (3J5)
U92
LS08
(J1) READ-N
LS32
U72
U52
(G8) POWERONRES-N
BRCLR-N (3F3)
LS139 1/2
U71
U61
PRDTSEL-N (5D5)
PRCONTSEL-N (5E3)
PRSTRSEL-N (5D3)
SEL-N (3F6)
COMPANY CONFIDENTIAL
K158
1
MPU, CLK
ﾃﾞｺｰﾀﾞ
TITLE HS180ASE02H
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI MCPAS DWG NO

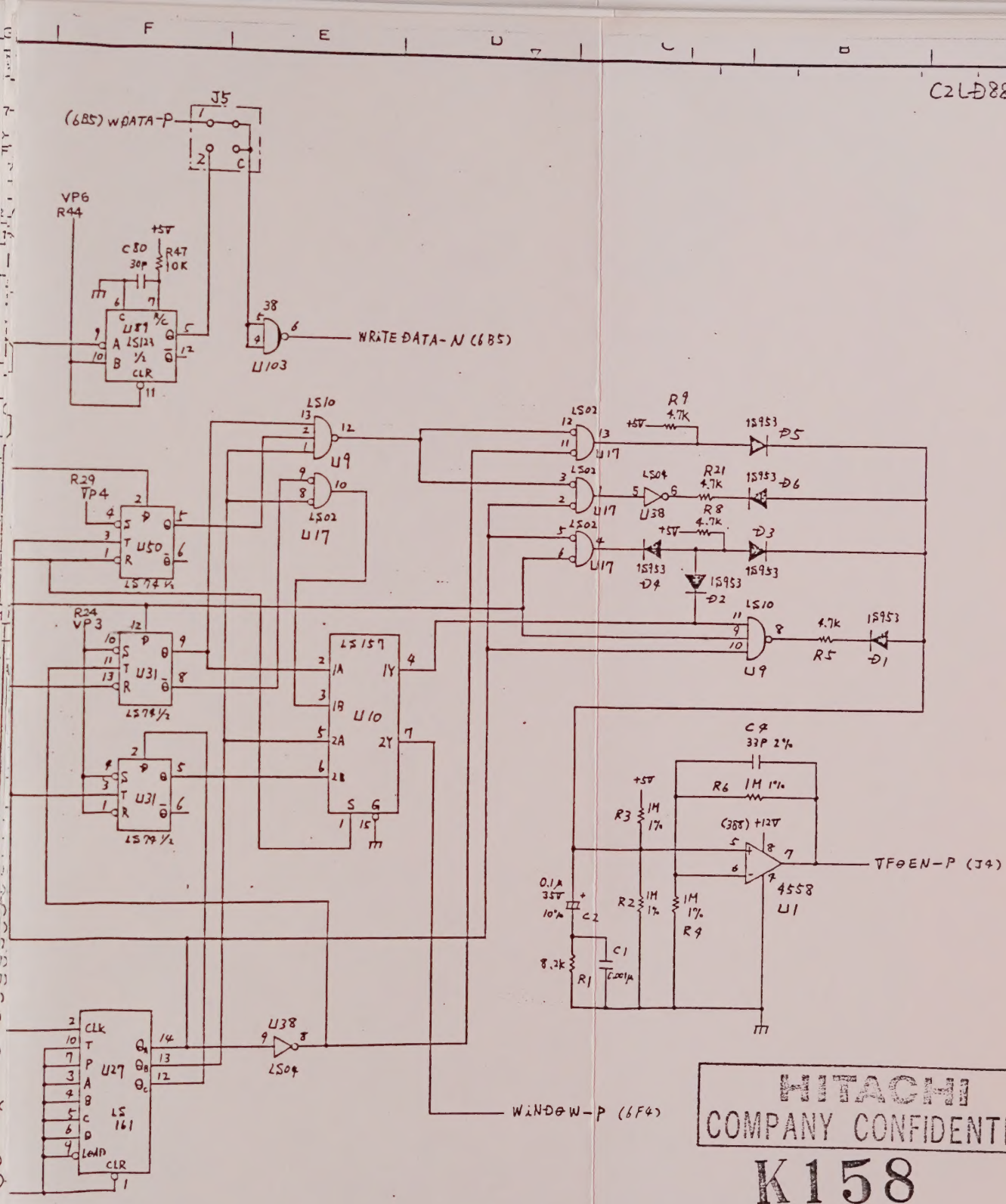

P3 CONNECTOR
(CRT ｺﾈｸﾀ)
FG (3A8)
TXD CRT (3A4)
RXD CRT (3A5)
RTS CRT (3A4)
CTS CRT (3A5)
DSR CRT (3A4)
SG (3A4)
DCD CRT (3A5)
(RXD TTL)
(TXD TTL)
(CTS TTL)
(RTS TTL)
(DSR TTL)
(DTR TTL)
DTR CRT (3A3)
P4 CONNECTOR
(HOST ｺﾈｸﾀ)
FG (3A8)
RXD HOST (3A7)
TXD HOST (3A6)
CTS HOST (3A7)
RTS HOST (3A6)
DTR HOST (3A6)
SG (3A6)
DCD HOST (3A7)
DSR HOST (3A7)


P5 CONNECTOR
STROBE-N (5A3)
PD0-P (5A6)
PD1-P (5A5)
PD2-P (5A5)
PD3-P (5A5)
PD4-P (5A5)
PD5-P (5A5)
PD6-P (5A5)
PD7-P (5A5)
PRACK-N (5A1)
PBSY-P (5A4)
PEMPTY-P (5A4)
SELECT-P (5A4)
PRIME-N (5A2)
FAULT-N (5A1)
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) GND
(5A6) 0V
(5A6) GND
(5A6) 0V
P6 CONNECTOR
GND (6A8) (6A6) DIRECTION-
HEADLOAD-N (6A3) (6A3) GND
GND (6A8) (6A6) STEP-N
INUSE-N (6A7) (6A8) GND
GND (6A8) (6A5) WRITEDATA-
UNIT3SEL-N (6A6) (6A8) GND
GND (6A3) (6A5) WRATEGATE-
INDEX-N (6A7) (6A8) GND
GND (6A8) (6A7) TRK0-N
UNIT0SEL-N (6A4) (6A8) GND
GND (6A8) (6A7) WPRT-N
UNIT1SEL-N (6A4) (6A8) GND
GND (6A8) (6A4) READDATA-
UNIT2SEL-N (6A6) (6A8) GND
GND (6A8) (6A5) SIDESEL-
MOTERON-N (6A3) (6A8) GND
GND (6A8) (6A6) READY-N


P1 CONNECTOR
P2 CONNECTOR
+5V
GND
-12V
+12V
-15V
+15V
SECRESET-N
SYSRESET-N
SYSPAUSE-N
SYSPACK-N
SECIEN-N
ACFAIL-N
TEST-N
SYSFAIL-N
BERR-N
RETRY-N
FC0-N
FC1-N
FC2-N
FC3-N
IRQ1-N
IRQ2-N
IRQ3-N
IRQ4-N
IRQ5-N
IRQ6-N
IRQ7-N
IACK-N
IACKIN-N
IACKOUT-N
BGOIN-N
BGOOUT-N
BG1IN-N
BG1OUT-N
BG2IN-N
BG2OUT-N
BG3IN-N
BG3OUT-N
BG4IN-N
BG4OUT-N
BR0-N
BR1-N
BR2-N
BR3-N
BR4-N
BBSY-N
BCLR-N
BREL-N
(RESERVED)
MEMSEL-N
8BIT-N
TRIG-N
ILGBREAK-P
CMDRESET-N
16SEL-N
ASE-N
CBR-N
START-N
EMRQ-N
EMGK-N
WINDOWUSER-N
STEPUSER-N
RUNUSER-N
BRES-N
BHALT-N
BBERR-N
BBR-N
NOCLK-N
BREAKKEY-N
UCLKMODE-N
ACTSET-N
TRACESEL-N
LA12-N
LA13-N
LA14-N
LA15-N
LA16-N
LA17-N
LA18-N
LA19-N
LA20-N
LA21-N
LA22-N
LA23-N
DS2-N
DS3-N
DTACK-N
AS-N
DS0-N
DS1-N
WRITE-N
SERVED
PARITY0-N
PARITY1-N
AEN-N
XTDADR-N
SECMAP-N
RAMDIS-N
RDCWI-N
RAMDIS-N
ACCLK-P
SYSCLK-P
COMPANY CONFIDENTIAL
K158
TITLE HS180ASE02H
HI80CONT02 (1/8)
Hitachi, Ltd.
Tokyo Japan
343 MUSASHI WORKS DWG NO


K
J
I
H
G
8
7
6
5
4
3
2
1
(6E8) WRTIMING -P
LS04
U76
R29
VP4
VP3
R24
(6B5) WDATA -N
U43
LS74 1/2
U36
LS95
(6C4) PS1-P
U42
LS153
LS04
U38
(6C4) PS0-P
U50
(6B3) MFM-N
C18
68P
R11
5.1K
R23
220Ω
R22
330Ω
+5V
(6B4) RDATA-N
U67
LS221
1/2
CLR
RDATA-P (6C4)
C25
200P
R13
9.1K
TR1
R14
VP2
U26
(6B3) HOLD-P
(A4) VFOEN-P
C38
68P
9.1K
R26
C39
R27
(6E3) VFORES-N
U37
R24
VP3
(6E5) D03-P
U117
VP
(6H3) FDCONTSEL-N
(6E3) VFORES-N
LS74
U118
LS164
CLR A B
CLK
QH
(6C8) INDEX-P
U115
LS04
KES 43109
株式HS-A2

C2LD88665



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COMPANY CONFIDENTIAL

K158

(7) TFO

DWN	A. Kikuta	86·8·21	PROJECTION
CHKD			SCALE NTS
APPD			

TITLE: H180 CONT02 回路図

SOI TYPE 100 | CLASS. | MX WORK SPEC NO.

Hitachi, Ltd.
Tokyo Japan

MUSASHI WORKS DWG. NO. 343

SH 8

ACCO USA
WHEELING, ILLINOIS 60090
25077
0 50505 25077 6
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MADE IN USA

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